SHERWIN-WILLIAMS.

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August 18, 2009

Mr. Ray Klimcsak
U.S. Environmental Protection Agency – Region 2
290 Broadway 19th Floor
New York, New York 10007-1866

RE: United States Avenue Burn Site
Groundwater Results Evaluation and Proposal for Further Action

The Sherwin-Williams Company Sites – RI/FS Activities
Gibbsboro, New Jersey
Administrative Order Index No. II CERCLA-02-99-2035

Dear Mr. Klimcsak:

The Sherwin-Williams Company (Sherwin-Williams) has prepared the attached Technical Memorandum regarding the Groundwater Results Evaluation and Proposal for Further Action at the United States Avenue Burn Site.

This Technical Memorandum provides a summary of the investigation activities conducted at the Burn Site, presents an evaluation of the current understanding of site geology and hydrogeology, summarizes the groundwater data that have been collected, and, based on the current understanding of groundwater conditions, proposes the installation of additional monitoring wells.

Should you have any questions or comments regarding any of the responses and explanations presented herein, please do not hesitate to contact me at (216) 566-1794 or via e-mail at mlcapichioni@sherwin.com.

Sincerely,

Mary Lou Capichioni

Mary Lou Capichioni
Director Remediation Services

282383

L:\SHERWIN\RI-FS\2.5 Communications Regulatory\Burn Site\Groundwater\Final - August 2009\Text\Burn Site Groundwater Report Transmittal Letter 08-14-09.doc

Attachment

cc: J. Josephson, EPA (New York)
M. Pensak, EPA (Edison)
W. Sy USEPA
J. Doyon, NJDEP (4 copies)
P. Parvis, HDR
J. Gerulis, Sherwin-Williams (w/o enclosures)
A. Danzig, Sherwin-Williams (w/o enclosures)
S. Peticolas, Gibbons, Del Deo, Dolan, Griffinger, & Vecchione (w/o enclosures)
H. Martin, ELM
R. Mattuck, Gradient
S. Jones, Weston Solutions
S. Clough, Weston Solutions
A. Fischer, Weston Solutions

GROUNDWATER INVESTIGATION

This "Groundwater Results Evaluation and Proposal for Further Action, United States Avenue Burn Site", is being submitted to the United States Environmental Protection Agency, Region 2 New Jersey Remediation Branch (EPA) in a similar format and with similar content to that included in the April 2009 Technical Memorandum responding to the EPA comments regarding the groundwater sampling and evaluation of groundwater conditions at The Sherwin-Williams Company (Sherwin-Williams) Route 561 Dump Site. This submittal provides a summary of the investigation activities conducted at the Burn Site, presents an evaluation of the current understanding of site geology and hydrogeology, summarizes the groundwater data that have been collected, and, based on the current understanding of groundwater conditions, proposes the installation of additional monitoring wells.

The proposed scope of work also incorporates EPA suggestions for the groundwater investigation at the Former Manufacturing Plant (FMP) site. Several of the wells installed at the Burn Site are more than 20 years old, and, as part of this scope of work, will be redeveloped prior to sampling.

1.0 INTRODUCTION

During the Remedial Investigation (RI) conducted during Summer 2005, groundwater investigation activities were performed at the United States Avenue Burn Site (Burn Site) and the adjacent Rail Road Site. Even though these two sites are physically separated by United States Avenue, they have been combined into one hydrogeologic entity due to their close proximity. Following the completion of the field work, a summary report was submitted to the EPA along with a proposal for the installation of additional groundwater monitoring wells. At that time, the EPA deferred responding to the proposal for additional groundwater investigation. The EPA requested that Sherwin-Williams provide additional information, including an evaluation of groundwater flow direction, incorporating surface water levels, and an assessment of the site hydrogeology. This Technical Memorandum provides the requested information.

Seven shallow monitoring wells were installed, developed, and sampled at the Burn Site, and two shallow monitoring wells were installed, developed and sampled at the adjacent Rail Road Site. Four existing shallow monitoring wells (MW-7, MW-8, MW-9 and MW-10) at the Burn Site were also sampled as part of the RI activities.

Slug tests were performed at each of the newly installed wells in order to develop an estimate of hydraulic conductivity and seepage velocity, and groundwater elevation measurements were collected from all existing and newly-installed wells to obtain information regarding groundwater flow direction and horizontal hydraulic gradients. Water level measurements were obtained from an existing deep groundwater monitoring well (MW-40), but no groundwater sampling was conducted. The following is a compilation and description of the activities performed.

2.0 SUMMARY OF DRILLING AND MONITORING WELL INSTALLATION ACTIVITIES, 1981 - 2005

Groundwater monitoring wells were installed in the Burn Site in June 1981, November 1999, and June/July 2005 as part of three separate phases of investigation. The monitoring well locations are presented on Figure 1.

This section provides a summary of both the historic monitoring well installation activities and the most recent monitoring well installations performed in 2005. A summary of monitoring well construction details is provided in Table 1. Soil boring logs and monitoring well construction logs are provided in Attachment 1. Copies of the Monitoring Well Permit (DWR-133M), Monitoring Well Records, and Monitoring Well Certifications (Form A) are provided in Attachment 2.

The three monitoring well installation events are summarized below.

2.1 Monitoring Well Installation - 1981

Auger techniques were used to install four shallow monitoring wells (MW-7, MW-8, MW-9, and MW-10) on June 3, 1981. At the time of installation, monitoring wells MW-7, MW-8, and MW-9 were originally named MW-12, MW-13, and MW-11, respectively. These wells were renamed some time prior to 1997, and the more recent nomenclature continues to be used. Monitoring well MW-10 has not been renamed since the time it was originally installed.

The wells were installed by New Jersey licensed Craig Test Boring Company, Inc. of Mays Landing, New Jersey. Monitoring wells were installed in a 12-inch-diameter boring and were constructed of 4-inch-diameter, schedule-40 polyvinyl chloride (PVC) well screens and riser pipes. The well screens were 10 feet in length with a 0.020-inch (20-slot) slot size. Monitoring wells MW-7, MW-8, and MW-10 were screened 5'-15' below ground surface (bgs). Monitoring well MW-9 was screened 10'-20' bgs. All wells were finished above grade using protective steel stick-up outer casings.

According to the well driller's log, five feet and eight feet of fill were encountered below ground surface during well installation at MW-7 and MW-9, respectively. No fill was logged at MW-8 and MW-10. Dark brown (MW-7) and dark gray (MW-9) fine sand and some silt were logged below the fill to a depth of 15 feet and 20 feet bgs, respectively. Where fill was not present, yellow (MW-8) and light gray (MW-10) fine sand and some silt were logged in the upper 15 feet bgs.

2.2 Monitoring Well Installation – 1999

On November 8, 1999, mud-rotary drilling techniques were used to install deep monitoring well MW-40. Monitoring well MW-40 was installed by James C. Anderson

Associates, Inc. of Moorestown, New Jersey. This well was installed as part of the Phase IV Investigation at the Paint Works (now Former Manufacturing Plant).

An 8-inch carbon steel isolation casing (from surface to 53 feet bgs) was grouted into a silty clay confining unit. The monitoring well was constructed of 4-inch-diameter, schedule-40 PVC well screen and riser pipes. The well screen was 10 feet in length with a 0.010-inch (10-slot) slot size. The screen was set from 60 to 70 feet bgs, immediately below what was reported as a confining silty clay. Monitoring well MW-40 was finished above grade using a protective steel stick-up outer casing.

According to the driller's monitoring well record (Attachment 1), mixtures of light and medium brown, yellowish, and orange silty sand were encountered to a depth of 44 feet bgs. An orange to light red silty clay was present from 44 to 56 feet bgs. A dark gray to green-black silty clay was logged between 56 and 60 feet bgs. From 60 to 70 feet bgs a dark green to black silty fossiliferous sand was noted.

2.3 Monitoring Well Installation – 2005

Between June 16 and July 21, 2005, nine shallow monitoring wells were installed. Seven of these wells were at the Burn Site (BSMW0001, BSMW0002, BSMW0003, BSMW0004, BSMW0005, BSMW0006 and BSMW0007), and two of these wells were at the Rail Road Site (RRMW0001 and RRMW0002). The drilling and monitoring well installation were conducted by East Coast Drilling, Inc. (ECDI) of Moorestown, New Jersey. ECDI is a New Jersey-licensed driller (New Jersey License No. M1224). All drilling and monitoring well work was performed under supervision of trained and experienced Weston Solutions, Inc. (Weston®) personnel.

All Burn Site and Rail Road Site well borings were advanced by ECDI with a rubber-tracked model 6610DT Geoprobe® rig capable of hollow-stem auger (HSA) borings. Direct-push technology was used for logging of soil samples from each well location. Drilling was limited to the upper 15 feet bgs. A 5-foot MacroCore® sampler and disposable acetate sleeves were used for collection of all soil samples. All soil samples were inspected and logged by a qualified field geologist and field screened using a photoionization detector (PID). Subsequent to the field activities a soil boring log was created for each boring describing the soil types encountered, visual observations such as staining, and PID readings. No soil samples were collected for laboratory analyses.

Shallow soils (i.e., above 15 feet bgs) encountered in the Burn Site and Rail Road Site predominantly consist of fine to coarse sand and gravel with some clay and silt also present. Detailed lithologic descriptions are presented in the soil boring logs (Attachment 1).

Monitoring wells were installed by over-drilling each soil boring location using 8-inch outside diameter (4.25-inch inside diameter) hollow-stem augers. The monitoring wells were constructed of 2-inch-diameter, schedule-40 polyvinyl chloride (PVC) well screens and riser pipes. The well screens were 10 feet in length and had 0.010-inch (10-slot) slot

sizes. The well filter pack was constructed with Morie sand #1 and granulated bentonite was used to create the annular seal above the sand filter pack. The filter packs were placed in the well borehole from approximately 1 foot below or at the bottom of the well screens up to approximately 1 to 2 feet above the screen. A finer Morie sand #00 was used as a choke layer between the filter pack and the bentonite seal. All wells were finished above grade using 6-inch diameter protective steel stick-up outer casings. Sloping concrete pads measuring approximately 2 feet by 2 feet and 4 inches to 6 inches thick were placed around the protective outer casings to seal and secure the wells above ground. All wells were marked with their respective identifications on steel tags held by steel collars around the well outer casings.

3.0 MONITORING WELL DEVELOPMENT

No well development information is available for the 1981 shallow monitoring wells. Deep monitoring well MW-40, installed in 1999, was developed by the driller by pumping at 5 gallons per minute (gpm) for 2 hours.

The 2005 monitoring wells were developed following installation by using a surge block and small submersible pumps (Whale and/or Typhoon pumps). The pump was initially placed at the bottom of the well screen and manually surged up and down at periodic intervals. A portable turbidity meter (LaMotte Model 2020) was used to monitor water turbidity during well development. The turbidity meter was calibrated in the field prior to well development using turbidity standards of 1 and 1,000 nephelometric turbidity units (NTU). Water was collected directly from the dedicated polyethylene pump discharge tubing at 5-minute intervals for turbidity monitoring. The development water was containerized in 55-gallon drums, labeled, and sent off site for disposal.

The monitoring wells were developed until the development water became relatively silt-free and clear based on turbidity readings, or for a maximum of four hours. Only one well in the Burn Site (BSMW0005) reached a final turbidity reading below 10 NTU. The remainder of the wells in the Burn Site and Rail Road Site had final turbidity readings ranging from 14 to 93 NTU. Monitoring wells BSMW0001, BSMW0002, and RRMW0001 were developed on two occasions with final turbidity levels measured as 17, 93, and 26 NTU, respectively. Well development data are summarized in Table 2.

4.0 MONITORING WELL SURVEY

The 2005 monitoring wells were surveyed by T&M Associates, of Moorestown, New Jersey, a New Jersey-licensed surveyor (N.J.P.L.S. No. 32106). Well survey data included all horizontal locations, ground surface elevations, top of inner PVC casing (TIC) elevations, and top of outer protective casing (TOC) elevations. The elevations (NAVD 88) were reported to the nearest 0.01 foot based on first order survey benchmarks. Location coordinates were reported using both the Global Positioning System (GPS) geographic coordinates to the nearest 0.01 second and the New Jersey State Plane Coordinate System (NAD 83) to the nearest 0.01 foot. Monitoring Well Certification Form Bs are included in Attachment 3.

In addition to monitoring wells, Weston sited three elevation control points (designated as Control Monuments [CM]) at strategic locations within the Burn Site to aid in the measurement of surface water elevations along White Sand Branch and Honey Run, which flow into and converge within the Burn Site. Downstream of the convergence, White Sand Branch flows through a culvert under United States Avenue, and discharges into Bridgewood Lake.

The elevation control points used for the Burn Site were located along White Sand Branch (designated CM-09A and B) for the northern portion of the Burn Site and along Honey Run (designated CM-10) for the southern portion of the Burn Site. The control monuments also were surveyed by T&M Associates to establish their horizontal location and vertical elevation. The elevations (NAVD 88) were reported to the nearest 0.01 foot based on first order survey benchmarks. Monument survey location coordinates were reported in both the GPS geographic coordinates to the nearest 0.01 second and the New Jersey State Plane Coordinate System (NAD 83) to the nearest 0.01 foot.

5.0 GROUNDWATER AND SURFACE WATER ELEVATION MEASUREMENTS, 2005 - 2006

Between October 2005 and March 2006, Weston conducted groundwater elevation monitoring events using the Burn Site and Rail Road Site wells. After the elevation control points were designated and surveyed, Weston also conducted an additional round on September 12, 2006 to collect synoptic groundwater and surface water elevation measurements.

A Solinst® oil-water interface probe was used to measure depth to water (DTW) in the monitoring wells. DTW was measured in relation to the wells' TIC. Surface water elevations were obtained in September 2006 at four locations (BS02, BS03, BS04, and BS05) in the Burn Site using a level (David White Model 8824) and survey rod. The surface water elevation was calculated to the nearest 0.01 foot in relation to the elevation of the elevation control point.

Groundwater elevations were calculated by subtracting the measured DTW from the TIC elevation. The shallow groundwater and surface water elevation data were used to construct groundwater contour maps for the Burn Site/Rail Road Site. A summary of the measured depth to water, groundwater elevation, and surface water elevation data for the Burn Site/Rail Road Site is presented in Table 3.

The shallow well soil boring logs indicate the upper 15 feet of the Burn Site/Rail Road Site primarily consists of sand, and there is no potentially confining geologic unit present. Based on the geology seen in the upper 15 feet the shallow groundwater within the Burn Site/Rail Road Site is unconfined. The October 2005 to September 2006 DTW measurements from the 2005 Burn Site monitoring wells found groundwater at depths ranging from 0.1 feet bgs (BSMW0006) to 3.6 feet bgs (BSMW002 and BSMW0004).

Seasonally, groundwater fluctuated from 0.4 feet (BSMW0002 and BSMW0007) to 2.3 feet (BSMW0004) during this same time period.

Between October 2005 and September 2006 shallow groundwater at the Rail Road Site ranged from 1.1 feet bgs (RRMW0001) to 2.3 feet bgs (RRMW0002). For the same time period, the seasonal shallow groundwater fluctuation at RRMW0001 and RRMW0002 was 0.7 and 0.4 feet, respectively.

5.1 Shallow Groundwater Contour Maps

The shallow groundwater contours were designed using hand contouring techniques. Surface water elevation data (September 2006 only) were used as control elevation points to aid in the groundwater contour design in the vicinity of creeks and water bodies. Groundwater contour maps for three select events of groundwater monitoring are presented in Figures 2 through 4. The November 2005, January 2006, and September 2006 events were selected because they are representative of expected seasonal fluctuations in shallow groundwater.

Groundwater contour maps from November 2005, January 2006, and September 2006 were used to assess groundwater flow directions and calculate average horizontal hydraulic gradients across the Burn Site/Rail Road Site. Based on the groundwater contour maps, the inferred groundwater flow direction is generally from the north, south, and east perimeters of the Burn Site, towards the axis of the White Sand Branch and Honey Run stream channels, and perpendicular to the topographic contours.

6.0 SITE-SPECIFIC GROUNDWATER HORIZONTAL HYDRAULIC GRADIENT

Based on the site topography, different horizontal hydraulic gradients are present, depending upon the location of the well and its relative location to the other wells and surface water measuring points within the Burn Site, as shown on Figure 2, Figure 3 and Figure 4.

For the purpose of estimating a site specific value, horizontal hydraulic gradients were calculated using various wells and measuring points located throughout the site. The intent is to calculate a gradient from the highest to lowest elevation in a direction parallel to the axis of stream flow and perpendicular to the topography. The elevation data from the September 2006 gauging event were used for these calculations.

Based on horizontal hydraulic gradients obtained from groundwater contour maps, the direction of groundwater flow, and the discharge location, the Burn Site can be separated into three general areas.

- Northern Burn Site Area (White Sand Branch) is limited to the area north of White Sand Branch, where the groundwater flow direction is north to south into White Sand Branch. The range of horizontal hydraulic gradients in this area is approximately 0.003 ft/ft to 0.19 ft/ft. The horizontal hydraulic gradient along the

axis of White Sand Branch from measuring point BS-05 (located at the upstream fence line where White Sand Branch enters the Burn Site) to BS-04 (located downstream at the culvert exiting the Burn Site) was calculated to be 0.003 ft/ft for the September 2006 event.

- Western Burn Site Area (United States Avenue) is south of the White Sand Branch and southwest of Honey Run, near the western boundary adjacent to United States Avenue, where the groundwater flow direction is towards the northwest. The horizontal hydraulic gradient in this localized area ranges from 0.008 ft/ft to 0.015 ft/ft.

- Southern Burn Site Area (Honey Run) is limited to south of Honey Run, where the groundwater flow direction is south to north into White Sand Branch. The range of horizontal hydraulic gradients in this area is approximately 0.005 ft/ft to 0.012 ft/ft. The horizontal hydraulic gradient along the axis of Honey Run from measuring point BS-03 (located at the upstream fence line where Honey Run enters the Burn Site) to BS-04 (located downstream at the culvert exiting the Burn Site) was calculated to be 0.005 ft/ft for the September 2006 event.

6.1 Deep Groundwater Geology and Hydrogeology

The MW-40 soil log described a "silty clay" unit present 44 to 60 feet bgs. Soil property testing (presented below) confirmed the fine-grained nature and low hydraulic conductivity of this unit. This silty clay is underlain by a fossiliferous sand unit. MW-40 is screened from 63 to 73 feet bgs and entirely within the deep fossiliferous sand. Based on the geology at MW-40, the groundwater within the deep fossiliferous sand is believed to be present under confined conditions.

Depth-to-groundwater measurements in MW-40 from October 2005 and March 2006 indicate that the potentiometric groundwater surface generally ranged between approximately 1.0 and 2.3 feet bgs; which represents a seasonal deep groundwater fluctuation of approximately 1.3 feet.

The vertical hydraulic gradient between the shallow sand and deep sand groundwater systems cannot be accurately calculated because there are no true monitoring well couplets at the Burn Site/Rail Road Site. However, the October 2005, January 2006, and March 2006 groundwater elevation monitoring events can be used to estimate the direction of the vertical hydraulic gradient between the shallow and the deep sand groundwater systems at the Burn Site. During these events, the estimated water table elevation of the shallow unconfined aquifer in the vicinity of MW-40, was approximately 75 feet above mean sea level (amsl). The actual measured elevation of the deep groundwater system piezometric head at MW-40 during the October 2005, January 2006, and March 2006 events was 78.41 feet, 79.71 feet, and 79.21 feet amsl, respectively. These data consistently support confined conditions within the deep fossiliferous sand and suggest an upward hydraulic gradient between the deep and shallow groundwater systems in the vicinity of MW-40.

Because there is presently only one deep groundwater monitoring well at the Burn Site/Rail Road Site, the deep groundwater apparent flow direction and horizontal hydraulic gradient in this area could not be derived.

6.2 Clay and Silt Layer Soil Property Test Results

During the drilling for deep monitoring well MW-40, a Shelby tube sample was collected from the top of the confining unit and analyzed using ASTM Method D 5084. The liquid limit, plasticity limit, and plasticity index of this upper portion of the confining unit were determined by using ASTM D 4318. Particle size analysis of the upper portion of the confining unit was analyzed by using ASTM D 422. All analyses were performed by Severn Trent Laboratories (STL) in University Park, IL.

Based on three tests, the average hydraulic conductivity of the upper portion of the confining unit was estimated to be approximately 3.0E-07 cm/sec (8.5E-4 ft/day).

The upper portion of the confining unit had liquid limit, plasticity limit, and plasticity index of 35, 17, and 17, respectively. Based on the grain size analyses within the upper portion of the confining unit, the material consists of approximately 15% clay, 47% silt, 33% fine sand, and 5% coarse to medium sand. The cumulative results of these tests indicate the upper portion of the confining unit consists of medium plastic inorganic fine sandy silt (ML), with some clay.

Based on a grain size analysis from the lower portion of the confining unit (53 feet bgs) the deep portion is clayey fine sand (SC), some medium silt, with trace medium and coarse sand.

6.3 Hydraulic Conductivity Tests – Shallow Groundwater System

Single well hydraulic conductivity tests (i.e., slug tests) were performed for all the shallow Burn Site/Rail Road Site wells installed in 2005. The hydraulic testing was conducted in the two Rail Road Site wells on September 7, 2005; and at the seven Burn Site wells on September 8, 2005. At each monitoring well, two rising head and two falling head slug tests were performed to ensure reproducibility.

An In-Situ® miniTROLL® 9000 data logger with a 15 pounds per square inch (PSI) pressure/level and temperature sensors was used to collect continuous water displacement measurements from the monitoring wells. A Solinst® electronic water level meter was used to measure initial depth to groundwater prior to slug testing and determine how far into the water column the slug needed to be lowered. Two slugs (Slug I and Slug II) were constructed for the slug test event. Both consisted of approximately 3-foot-long PVC pipes (1-inch ID, 1.13-inch OD) filled with cement and sealed on both ends with PVC caps. The Slug I volume was calculated to be 53.33 cubic inches (in^3) and the Slug II volume was calculated to be 52.57 in^3. Slug I was used with wells RRMW0001, RRMW0002, BSMW0001, BSMW0003, BSMW0005,

BSMW0006 and BSMW0007, and Slug II was used with wells BSMW0002 and BSMW0004.

Groundwater displacements were recorded continuously at one-second intervals, first with the slug placed in (i.e., falling head test) and then with the slug taken out (i.e., rising head test) of the well. This procedure was repeated once (slug-in1, slug-out1, slug-in2 and slug-out2) for each well for verification of data consistency. The slug test data were recorded in real time with the miniTROLL-interfaced palm computer data logger.

Once the field data were collected, aquifer test results were interpreted at Weston's Edison, NJ office using software (Aqtesolv® – v-4.50.002) that provided plots for visual curve-matching of aquifer straight-line solutions to time-displacement data measured during the field tests using various analytical methods that are discussed in the following section.

6.3.1 Shallow Aquifer Hydraulic Conductivity Test Assumptions and Results

Based on site soil boring logs, the shallow aquifer is assumed to be unconfined and isotropic near the surface and with a saturation thickness of approximately 40 feet. The base of the shallow aquifer is considered to be the top of the silty clay observed at 44 feet bgs in MW-40.

Seven (BSMW0001, BSMW0002, BSMW0004, BSMW0005, BSMW0006, BSMW0007, RRMW0002) of the nine 2005 wells installed at the Burn Site/Rail Road Site have a partially submerged screen; so a gravel pack correction using Aqtesolv®'s typical coarse sand effective porosity value of 30% (Morris & Johnson, 1967[1]) was applied during the data analysis to account for drainage from the gravel pack. As applicable, the straight line fit to the second linear segment of the solution was selected for the hydraulic conductivity estimate.

The remaining two wells (BSMW0003 and RRMW0001) have screens fully submerged in the aquifer, so a gravel pack correction for partially submerged screens was not required.

Slug test data were evaluated by five analytical methods including:

- Bouwer and Rice (1976);
- Hvorslev (1957);
- Hyder et al. (KGS) (1994);
- Dagan (1978); and
- Springer-Gelhar (1991).

According to Aqtesolv®, the basic assumptions used for all of these methods include:

[1] *Morris, D.A. and A.I. Johnson, 1967. Summary of hydrologic and physical properties of rock and soil materials as analyzed by the Hydrologic Laboratory of the U.S. Geological Survey, U.S. Geol. Surv. Water-Supply Paper 1839-D, 42p.*

- Aquifer has infinite areal extent;
- Aquifer is homogeneous and of uniform thickness;
- Test well is fully or partially penetrating;
- Aquifer is unconfined (except Hvorslev);
- Flow to well is quasi-steady-state (storage is negligible);
- Volume of slug, V, is injected into or discharged from the well instantaneously;
- Flow is unsteady (KGS method only); and
- Water is released instantaneously from storage with decline of hydraulic head (KGS method only).

Although the Hvorslev (1951) method assumes the aquifer is confined, Aqtesolv® provides an unconfined aquifer variant of the solution which applies a filter pack porosity correction for wells screened across the water table. For each method, the Aqtesolv® definitions and assumptions are provided in Attachment 4.

Aqtesolv® v-4.50.002 Professional was used for the solution calculations and curve fitting. All graphical solutions are provided as Attachment 5. The results of all the slug test methods are provided as Table 4. Arithmetic means of each solution method are provided for each well. The geometric means (using the arithmetic means from each well) are provided for each method used. In addition, the geometric means for Bouwer and Rice (1976) method only are provided independently for the Burn Site wells, and independently for the Rail Road Site wells (Table 4).

Because the Bouwer and Rice (1976) method is generally accepted given the site conditions (i.e., unconfined aquifer with partially penetrating wells), these data were used as a benchmark for the comparison of other slug test solution methods. The Bouwer and Rice (1976) results indicate an estimated hydraulic conductivity range of approximately 0.4 – 27.8 ft/day for the shallow groundwater.

The Hvorslev (1951) and Dagan (1978) methods yielded results greater than or equal to the results calculated using the Bouwer and Rice (1976) estimates. The unconfined variant of Hvorslev (1951) estimated a range of approximately 0.6 – 46.9 ft/day. The Dagan (1978) estimated range is approximately 0.5 – 33.0 ft/day.

The KGS (1994) and Springer-Gelhar (1991) methods yielded consistently lower results than the Bouwer and Rice (1976) estimates. The combined estimated range of the KGS (1994) and the Springer-Gelhar (1991) methods is 0.5 – 2.8 ft/day.

A linear correlation plot of the slug test data is provided (Attachment 5, Figure 1) and for each well an assessment of the precision of each method was made based on the relative standard deviation (Attachment 5, Table 1). The median was used for this evaluation because it is less affected by outlier data than the mean. A high precision rating was not calculated for any of methods used at any of the wells. A moderate precision was calculated using Bower and Rice (1976) at BSMW0001. A low or very low precision rating was calculated for the remaining test methods and wells, though

Bouwer and Rice (1976) generally exhibited a similar or relatively higher level of precision compared to the other methods.

6.3.2 Recommendations for Hydraulic Conductivity

Sherwin-Williams has evaluated various slug test methodologies and based upon that evaluation recommends that the Bouwer and Rice (1976) method be used for any future site-specific calculations (e.g., seepage velocity) which require an estimated hydraulic conductivity parameter. Depending on the use of the calculation, either well-specific arithmetic mean values or site-specific geometric mean values may be applied. As previously discussed, these values are summarized in Table 4. The Bouwer and Rice (1976) solution is selected because: 1) this most commonly used method is generally accepted by EPA for unconfined aquifers; 2) the differences between all solutions evaluated were less than an order of magnitude; and 3) the Bouwer and Rice (1976) results have a relatively higher level of precision as compared to slug tests results obtained using other methods.

The summary of results of the hydraulic conductivity testing in the Burn Site/Rail Road Site is provided in Table 4. For only Burn Site wells, the combined geometric mean for the Bouwer and Rice (1976) method was approximately 2.8 ft/day and for only Rail Road Site wells the combined geometric mean was approximately 1.0 ft/day.

6.4 Site-Specific Groundwater Seepage Velocity

In order to calculate the range of seepage velocities, the hydraulic conductivity values derived from the Bouwer and Rice (1976) method discussed above were used. The data from the September 12, 2006, gauging event were chosen as representative of site conditions and were subsequently used in the seepage velocity calculations. The seepage velocity is calculated by:

$$v = \frac{K(dh)}{n(dl)}$$

where,

v = seepage velocity
K = hydraulic conductivity
dh/dl = horizontal hydraulic gradient
n = porosity = 0.3 (assumed)

A seepage velocity was calculated for the horizontal hydraulic gradient regimes discussed in the previous section using the respective hydraulic conductivity calculated by the Bouwer and Rice (1976) method for each well. A separate calculation was also performed using the site geometric mean calculated using Bouwer and Rice (1976).

- Northern Burn Site Area (White Sand Branch) – The calculated seepage velocities for this area of the site range from 0.044 to 0.092 ft/day when using the arithmetic mean of the hydraulic conductivity values for slug tests at BSMW0001 and BSMW0004. When the Burn Site geometric mean K value (2.763 ft/day) was used, the seepage velocity was calculated as 0.155 ft/day.

- When calculating the seepage velocity from BS-05 to BS-04 (along the axis of White Sand Branch) using the arithmetic mean of the hydraulic conductivity values for slug tests at BSMW0003 and BSMW0004, the seepage velocity ranged from 0.007 to 0.017 ft/day. When the site geometric mean K value (2.186 ft/day) was used, the seepage velocity was calculated as 0.05 ft/day. When the Burn Site geometric mean K value (2.763 ft/day) was used, the seepage velocity was calculated as 0.029 ft/day.

- Western Burn Site Area (United States Avenue) – The seepage velocities for this area of the site ranged from 0.087 to 0.752 ft/day when using the arithmetic mean of the hydraulic conductivity values for slug tests at BSMW0005 and BSMW0006. When the Burn Site geometric mean K value (2.763 ft/day) was used, the seepage velocity was calculated as 0.075 ft/day.

- Southern Burn Site Area (Honey Run) - The seepage velocities for this area of the site ranged from 0.187 to 0.194 ft/day when using the arithmetic mean of the hydraulic conductivity values for slug tests at MW-9 and MW-10. When the Burn Site geometric mean K value (2.763 ft/day) was used, the seepage velocity was calculated as 0.161 ft/day.

- When calculating the seepage velocity from BS-03 to BS-04 (along the axis of Honey Run) using the arithmetic mean of the hydraulic conductivity values for slug tests at BSMW0007 and BSMW0004, the seepage velocity ranged from 0.027 to 0.054 ft/day. When the Burn Site geometric mean K value (2.763 ft/day) was used, the seepage velocity was calculated as 0.045 ft/day.

A summary of the seepage velocity calculations using the hydraulic conductivity derived from the Bouwer and Rice (1976) solutions is presented in Table 5.

6.5 Shallow Groundwater Sampling, September and October 2005

The shallow Burn Site/Rail Road Site wells, including the four shallow existing Burn Site wells (MW-7, MW-8, MW-9 and MW-10) were sampled approximately one month apart during two separate events in August and September/October 2005. The deeper well (MW-40) had been sampled previously in 2003, but was not sampled as part of this monitoring event.

During the sampling events, all monitoring wells were purged and sampled using a micro-purge bladder pump equipped with new, dedicated Teflon®-lined discharge tubing. All sampling equipment was decontaminated prior to initial use, between each

sampling location, and after completion of the groundwater sampling event. STL conducted the sampling events and collected all field parameters under supervision of Weston. STL is a New Jersey Department of Environmental Protection (NJDEP) certified laboratory (certification number 12028).

The wells were purged and sampled following the EPA low-flow groundwater sampling protocols and consistent with NJDEP protocols. The pump intake was set at the mid-screen depth and while the monitoring wells were being purged, the water quality parameters of temperature, pH, Eh, dissolved oxygen and specific conductivity were monitored using the Hach Sensor 1 multi-parameter water quality meter every three to five minutes until stabilization was achieved. Another parameter, turbidity, was monitored separately during purging using a LaMotte Model 2020 turbidity meter. Depth to water was monitored using a Solinst® electronic water level meter. A Solinst® interface probe was also used for groundwater-level monitoring to check for the presence of non-aqueous phase liquids (NAPLs) in groundwater. All purging parameter observations were recorded noting the presence of discernible odors and visible sheens. A PID (MultiRAE Plus) was used to measure the presence of volatile organic compounds (VOCs) in the well casings prior to any well monitoring.

Following collection in the field, groundwater samples were immediately transferred to a cooler with ice. A chain-of-custody was created at the end of each sampling event and delivered with the samples to STL in Edison, NJ. The analytical requirements for groundwater samples included Contract Laboratory Program (CLP) analyses (VOC+15, BNA+25, PCB, PCP, metals, cyanide) and several monitoring of natural attenuation (MNA) parameters (CO_2, total organic carbon, total dissolved solids [TDS], total suspended solids [TSS], Fe^{2+}, sulfide, sulfate, nitrate, nitrite, alkalinity, methane, ethane, ethene and chloride). A 4-week turnaround time was requested for the analyses.

In addition to investigative samples, quality assurance/quality control (QA/QC) samples were collected in accordance with Weston's Quality Assurance Project Plan (QAPP). Blind field duplicate and matrix spike/matrix spike duplicate (MS/MSD) samples were collected at a rate of one per 20 samples per analytical parameter. Field blanks were collected minimally once per event and analyzed for the same parameters as the field samples. Trip blanks (laboratory deionized water) were analyzed for VOCs once per shipment.

6.6 Summary of Groundwater Sampling Results

The groundwater sampling analytical results were previously submitted under separate cover in the document entitled *Evaluation of Strategic Sampling Results, U.S. Avenue Burn Site and Associated Reaches of Honey Run and White Sands Branch* (June 19, 2006). Figure 5, "Burn Site Groundwater Samples Round 1 (August 2005) and Round

2 (September/October 2005) Exceedences (all parameters)" is excerpted from the June 19, 2006 report and provided as Attachment 6[2].

As discussed in the June 19, 2006 report and summarized in Attachment 6, the groundwater sampling at the Burn Site and Rail Road Site found several constituents at concentrations greater than the New Jersey Department of Environmental Protection Class II-A Ground Water Quality Standards (GWQS), the criteria against which the groundwater sampling results were screened. These were:

- Benzene was found in four wells, two located in the northern portion of the Site (BSMW0002 and BSMW0003), and two in the center of the Site (MW-7 and MW-9). The highest concentrations (19 ug/L – 42 ug/L) were found in MW-9.

- Pentachlorophenol (PCP) was found in monitoring well, MW-7 at concentrations of 3.8 and 4.0 ug/L in August 2005 and 0.9 ug/l in October 2005, as compared to its screening criterion of 0.3 ug/l.

- Select metals were found in all wells at concentrations greater than their GWQS. As presented in the June 2006 report:

    - Arsenic was found at its highest concentrations (1,340 ug/L and 1,490 ug/L) in existing monitoring well MW-7, located in the center of the site, south of Honey Run. Arsenic was also found in monitoring wells BSMW0002, BSMW0003 and BSMW0004, located in the Northern Burn Site Area at concentrations ranging from 4.9 ug/L to 15.3 ug/L, and monitoring wells MW-8 and MW-9, located in the Southern Burn Site Area, at concentrations ranging from 5.9 to 9.6 ug/L. Arsenic was found at concentrations ranging from 4.7 ug/L to 8 ug/L in the two monitoring wells installed on the Rail Road Site.

    - The highest concentrations of lead were found in monitoring wells BSMW0002 (210 ug/L and 153 ug/L), MW-7 (98.9 ug/L – 100 ug/L), MW-9 (17.1 ug/L - 76.4 ug/L), BSMW0003 (27 ug/L – 46.6 ug/L), BSMW0005 (19.5 ug/L – 20.1 ug/L), and MW-8 (9.2 ug/L). Lead was not found at a concentration greater that its GWQS in either well installed on the Rail Road Site.

    - The presence of several other metals, including aluminum, iron, manganese and sodium appear to be naturally occurring. This conclusion was based on an evaluation of the results of the soil investigation and the distribution of these constituents in groundwater. With the exception of iron, these constituents were not found in soil at concentrations greater than the New Jersey Residential Direct Contact Soil Cleanup Criteria (RDCSCC), the criteria against which the

[2] *Figures 1, 5, and 6 of the Jun 19, 2006 document have the well locations BSMW0005 and BSMW0007 and associated data inadvertently transposed. BSMW0005 is actually located along the fence line adjacent to United States Avenue; and BSMW0007 is actually located south of Honey Run at the southeast boundary of the Burn site. A corrected Figure 5 (dated 08/14/09) showing the revised well locations and associated data is included with this submission.*

soil samples were screened, and they were all found at multiple locations in groundwater across the site.

There is some question as to whether the reported concentrations of metals are representative of non-particulate (i.e not adsorbed) concentrations in the wells. As discussed further in this memorandum, measures will be implemented to attempt to minimize the effects of turbidity on the sampling results.

7.0 GROUNDWATER INVESTIGATION SCOPE OF WORK

Based on the results of the initial groundwater sampling conducted in 2005 and the more recent hydraulic evaluation, Sherwin-Williams has identified four objectives for this phase of groundwater investigation:

1. Obtain an understanding of the vertical distribution of constituents in the unconfined aquifer.

2. Horizontally define the extent of non-particulate constituents previously found in the shallow monitoring wells.

3. Refine the current understanding of the vertical hydraulic gradient between the deeper confined aquifer and the unconfined aquifer.

4. Ensure that the data collected are, to the extent practicable, reflective of non-particulate conditions, minimizing the effects of turbidity in the samples.

To achieve these objectives, Sherwin-Williams is proposing:

- Installation of seven additional groundwater wells within the unconfined aquifer. Six of the new wells will be installed at the Burn Site; and one well is proposed at the Rail Road Site. The seven proposed wells are comprised of one couplet (one shallow and one intermediate well) and 5 intermediate wells.

- Redevelopment of the four wells installed in 1981 (MW-7, MW-8, MW-9, MW-10), redevelopment of the deep well MW-40, and development of all newly proposed wells.

- Collection of two additional rounds of groundwater samples along with a synoptic round of water levels (groundwater and surface water) prior to sampling. The sampling rounds will be spaced approximately 1 month apart.

Each of the tasks is discussed below.

8.0 MONITORING WELL INSTALLATION

The seven proposed wells will be installed in the following locations:

8.1 Shallow Well

As discussed in the June 19, 2006 report, the horizontal extent of constituents in groundwater is well defined by the existing monitoring well network. The perimeter wells on the Southern and Western Burn Site Areas contained only metals that are most likely attributable to natural conditions (aluminum, iron, manganese, thallium). Similarly, BSMW0001, located upgradient of BSMW0002, BSMW0003 and BSMW0004 on the Northern Burn Site Area, also contained constituents that are most likely associated with background conditions, although it is noted that the pesticide beta-BHC was found at an estimated concentration greater than its NJDEP GWQS of 0.04 ug/L in the October 2005 sampling round. Finally, the arsenic concentrations in both monitoring wells RRMW0001 (4.7 ug/L to 6.8 ug/l) and RRMW0002 (6.4 ug/L to 8 ug/l) approached the NJDEP GWQS of 3 ug/L.

No additional shallow monitoring wells are proposed to delineate site constituents, with the exception of the shallow well proposed at MW-40 as discussed below.

8.2 Couplet at MW-40

Two additional wells, the proposed couplet, will be installed at MW-40. This is the location at which shallow groundwater discharges to White Sand Branch on the west side of the Burn Site Area, and collecting additional groundwater data at this location will provide an understanding of groundwater chemistry at the most down gradient location of the western Burn Site Area. Installing wells in the unconfined aquifer in this location will also supplement the current understanding of the vertical hydraulic gradient between the deeper confined aquifer and the shallow unconfined aquifer.

8.3 Intermediate Wells

Intermediate groundwater wells will be installed at current locations BSMW0002, BSMW0004, MW-7, MW-9, and RRMW0001 to assess the vertical distribution of constituents found in shallow groundwater in these locations. Specifically:

- The intermediate well at location BSMW0002 will be used to evaluate the vertical distribution of the metals and benzene found in BSMW0002. BSMW0002 is the location at which the highest concentration of lead was found in groundwater.

- The intermediate well at location BSMW0004 will be used to evaluate the vertical distribution of metals found in BSMW0004, and will also serve as a down gradient location to monitor intermediate groundwater conditions in the northern Burn Site Area.

- The intermediate well at location MW-7 will be used to assess the vertical distribution of pentachlorophenol, arsenic, and lead found in MW-7. MW-7 was the location at which the highest concentration of arsenic was found and was the

only location at which pentachlorophenol was found at a concentration greater than the GWQS.

- The intermediate well at location MW-9 will be used to evaluate the vertical distribution of the benzene and metals found in MW-9. MW-9 is the location in which the highest concentrations of benzene were found.

- The intermediate well at location RRMW0001 will be used to evaluate the vertical distribution of elevated arsenic concentrations found in RRMW001 and RRMW0002. In addition, this proposed well will assess intermediate depth water quality west of the Burn Site, and adjacent to Bridgewood Lake.

A summary of the rationale and depths for each proposed monitoring well is provided in Table 6. The proposed monitoring well locations are presented on the attached Figure 5.

8.4 Well Installation Details

All proposed monitoring wells will be screened within the unconfined aquifer.

Based on the depth of the top of the confining unit at MW-40 (44 feet bgs), the shallow well will be screened 5 to 15 feet bgs, and the intermediate well will be screened 25 to 35 feet bgs.

All proposed intermediate monitoring wells will have a 10-foot screen length. The proposed intermediate wells will be installed so the top of the well screen is a minimum of 10 feet below the bottom of the existing well screen. The intermediate wells at BSMW0002, BSMW0004, MW-7, MW-40, and RRMW0001 will be screened 25 to 35 feet. The intermediate well at MW-9 will be screened 30 to 40 feet bgs. It is not anticipated that the intermediate wells will need to be double-cased, though this option will be dependent upon the observed geology and site conditions.

The monitoring wells will be installed using a Geoprobe® rig capable of hollow-stem auger (HSA) borings. Prior to the well installation, continuous split spoons or MacroCore® acetate sleeves will be collected and all cores will be field-screened at 2-foot intervals with a PID and x-ray fluorescence (XRF) unit. The geology will be logged by a qualified field geologist and visual observations such as staining will be noted. For each newly installed well, a soil sample will be collected from the midpoint of the screened interval or from the soils exhibiting the highest PID or XRF readings from within the proposed 10-foot screened interval, and submitted to the laboratory for target compound list (TCL) VOCs, TCL Semi-volatile Organic Compounds (SVOCs), target analyte list (TAL) Metals plus cyanide, and total organic carbon analysis.

In the location where a shallow and intermediate well couplet is to be installed, continuous logging will only be performed for the deeper boring to its target depth (35 feet bgs) and the shallow well will be installed via blind drilling to its target depth (15 feet

bgs). A soil sample will be collected from both the shallow and deep well boreholes. These samples will be collected from the midpoint of the screened interval or from the soils exhibiting the highest PID or XRF readings from within the proposed 10-foot screened interval. Soil samples for laboratory analysis will be collected as described above for both the shallow and deep well boring.

In cases where an intermediate well is to be installed adjacent to an existing shallow well to form a couplet, then the intermediate well will be logged continuously starting at the ground surface. A soil sample will be collected from the midpoint of the screened interval or from the soils exhibiting the highest PID or XRF readings from within the proposed 10-foot screened interval, and submitted for laboratory analysis as described above.

Monitoring wells will be installed by over-drilling each soil boring location using 8-inch outside diameter (4.25-inch inside diameter) hollow-stem augers. The monitoring wells will be constructed using 2-inch-diameter, schedule-40 polyvinyl chloride (PVC) well screens and riser pipes. The well screens will be 10 feet in length with 0.010-inch (10 slot) slot sizes. The well filter pack will be constructed with Morie sand #1 and granulated bentonite will be used to fill the annular seal above the sand filter pack. The filter packs will be placed in the well borehole from approximately 1 foot below or at the bottom of the well screens up to approximately 1 to 2 feet above the screen. A finer Morie sand #00 will be used as a choke layer between the filter pack and the bentonite seal. The wells will be finished above grade using 6-inch diameter protective steel stick-up outer casings or as flush mount installations depending upon the location. Sloping concrete pads measuring approximately 2 feet by 2 feet and 4 inches to 6 inches thick will be placed around the protective outer casings to seal and secure the wells above ground. All wells will be marked with their respective identifications on steel tags held by steel collars around the well outer casings.

8.5 Monitoring Well Development

All newly-installed monitoring wells, as well as MW-7, MW-8, MW-9, MW-10, and MW-40, will be developed prior to the sampling event and as per NJDEP requirements, a New Jersey-licensed well driller will be used to develop the wells. All wells will be developed as per the Standard Guide for Development of Ground-Water Monitoring Wells in Granular Aquifers (ASTM, 2005).

The monitoring wells will be developed in a similar matter as the monitoring wells installed during the summer, 2005. The monitoring wells will be developed following installation by using a surge block and small submersible pumps (Whale and/or Typhoon pumps). The pump initially will be placed at the bottom of the well screen and manually surged up and down at periodic intervals. A portable turbidity meter (LaMotte Model 2020) will be used to monitor water turbidity during well development. The turbidity meter will be calibrated in the field prior to well development using turbidity standards of 1 and 1,000 nephelometric turbidity units (NTU). Water will be collected directly from the dedicated polyethylene pump

discharge tubing at 5-minute intervals for turbidity monitoring and the development water will be discharged to the ground adjacent to the monitoring well.

Discharge of the development water to the ground surface where the water is considered to be contaminated is permissible by the NJDEP August 2005 *"Field Sampling Procedures Manual"* provided the following conditions are met: 1) The water is not permitted to migrate off-site. 2) There is no potential for contaminating a previously uncontaminated aquifer. 3) The discharge will not cause an increase to ground surface soil contamination. As stated in the June 2007 *"NJPDES Discharges to Ground Water Technical Manual for the Site Remediation Program"*, discharges to groundwater at remediation sites associated with the installation, development, and sampling of monitoring wells do not require a written pre-approval from the NJDEP or public notification.

The monitoring wells will be developed until the development water becomes silt-free and relatively clear based on the following protocol. If turbidity levels have improved to acceptable levels after two hours, the development will be considered complete. If turbidity levels have not improved, the development will continue for up to another two hours (for a total of four hours). If, after the four hour period, an improvement in turbidity is not observed, the well will be allowed to equilibrate overnight and the development will be performed again. If no improvement in turbidity levels is observed after the second attempt, the development effort will be terminated and the well will be allowed to rest for 2 weeks prior to being sampled.

8.6 Monitoring Well Sampling

Two rounds of sampling will be conducted 1 month apart for all newly installed and existing wells at the Burn Site/Rail Road Site. A synoptic round of water levels will be collected at all the wells prior to each sampling event. The monitoring wells will be sampled utilizing the same procedures as described for the sampling event conducted during summer 2005. The wells will be purged and sampled following the EPA low-flow groundwater sampling protocols and consistent with NJDEP protocols.

While the monitoring wells are being purged, water quality indicator parameters including temperature, pH, Eh, dissolved oxygen and specific conductivity will be monitored using a multi-parameter water quality meter and flow-through cell. Readings will be collected every five minutes until stabilization has been achieved. Another parameter, turbidity, will be monitored separately during purging using a LaMotte Model 2020 turbidity meter. Depth to water will be monitored using a Solinst® electronic water level meter. A Solinst® interface probe also will be used to measure drawdown and to check for the presence of NAPLs in groundwater. All purging parameter observations will be recorded noting the presence of discernible odors and visible sheens. A PID (MultiRAE Plus) will be used to screen for the presence of VOCs in the well casings prior to any well gauging or sampling.

The groundwater samples will be collected and submitted to the laboratory for CLP. Groundwater samples will be analyzed for specific constituents known to exceed their

respective criteria. These analyses are TAL metals plus cyanide, TCL VOCs, TCL SVOCs, TCL pesticides, chloride, total organic carbon, TSS, and TDS.

In addition to investigative samples, QA/QC samples will be collected in accordance with the QAPP. Blind field duplicate and MS/MSD samples will be collected at a rate of one per 20 samples per analytical parameter. Field blanks will be collected minimally once per event and analyzed for the same parameters as the field samples. Trip blanks (laboratory deionized water) will be analyzed for VOCs once per shipment.

Discharge of the purge water to the ground surface where the water is considered to be contaminated is permissible by the NJDEP August 2005 *"Field Sampling Procedures Manual"* provided the following conditions are met: 1) The water is not permitted to migrate off-site. 2) There is no potential for contaminating a previously uncontaminated aquifer. 3) The discharge will not cause an increase to ground surface soil contamination. As stated in the June 2007 *"NJPDES Discharges to Ground Water Technical Manual for the Site Remediation Program"*, discharges to groundwater at remediation sites associated with the installation, development, and sampling of monitoring wells do not require a written pre-approval from the NJDEP or public notification.

Tables

TABLE 1

MONITORING WELL CONSTRUCTION SUMMARY
SHERWIN-WILLIAMS
BURN SITE and RAIL ROAD SITE
Gibbsboro, NJ

WELL ID	Aquifer Designation	NJDEP Permit No.	Installation Date	NJSPC NAD-83 North	NJSPC NAD-83 East	Outer Casing Type (S or F)	Well Diameter (in)	Total Well Depth (ft bgs)	Existing Grade (ft amsl)	TOC Elevation (ft amsl)	TIC Elevation (ft amsl)	TS Elevation (ft amsl)	BS Elevation (ft amsl)	Depth to TS (ft bgs)	Screen Length (ft)	Screen Slot (in)	Screen/Riser Type
BSMW0001	Shallow	3100070254	6/16/2005	364838.043	361918.891	S	2	13	80.08	83.57	83.25	80.25	70.25	3	10	0.010	sch. 40 PVC
BSMW0002	Shallow	3100070255	6/20/2005	364775.280	361961.169	S	2	13	79.34	82.60	82.05	79.05	69.05	3	10	0.010	sch. 40 PVC
BSMW0003	Shallow	3100070256	6/20/2005	364808.974	362042.780	S	2	12	76.88	80.00	79.39	77.39	67.39	2	10	0.010	sch. 40 PVC
BSMW0004	Shallow	3100070257	6/22/2005	364737.244	361876.237	S	2	13	78.90	82.44	82.22	79.22	69.22	3	10	0.010	sch. 40 PVC
BSMW0005	Shallow	3100070339	7/20/2005	364546.742	361793.295	S	2	12	80.35	84.03	83.67	81.67	71.67	2	10	0.010	sch. 40 PVC
BSMW0006	Shallow	3100070340	7/20/2005	364188.266	361857.811	S	2	12	83.12	86.72	86.22	84.22	74.22	2	10	0.010	sch. 40 PVC
BSMW0007	Shallow	3100070341	7/21/2005	364280.917	362385.408	S	2	12	80.97	84.66	84.08	82.08	72.08	2	10	0.010	sch. 40 PVC
MW-7	Shallow	31-18085	6/3/1981	364504.040	361973.589	S	4	15	81.10	unknown	82.81	74.70	64.70	5	10	0.020	sch. 40 PVC
MW-8	Shallow	31-18086	6/3/1981	364364.121	361903.387	S	4	15	83.40	unknown	85.73	76.63	66.63	5	10	0.020	sch. 40 PVC
MW-9	Shallow	31-18084	6/3/1981	364300.871	362167.736	S	4	20	86.40	unknown	88.83	74.64	64.64	10	10	0.020	sch. 40 PVC
MW-10	Shallow	31-18083	6/3/1981	364096.731	362197.181	S	4	15	88.30	unknown	89.65	86.28	76.28	5	10	0.020	sch. 40 PVC
MW-40	Deep	31-56377	11/8/1999	364675.544	361806.667	S	4	73	80.60	83.45	83.21	20.60	10.60	63	10	0.010	sch. 40 PVC
RRMW0001	Shallow	3100070258	6/21/2005	364553.318	361647.639	S	2	12	76.83	80.44	79.71	77.71	67.71	2	10	0.010	sch. 40 PVC
RRMW0002	Shallow	3100070259	6/22/2005	364633.960	361658.426	S	2	12	77.38	80.11	79.54	77.54	67.54	2	10	0.010	sch. 40 PVC

NOTES:
TOC - Top of Outer Casing
TIC - Top of Inner Casing
TS - Top of Screen
BS - Bottom of Screen
ft bgs - Feet Below Ground Surface
ft amsl - Feet Above Mean Sea Level (NAVD 1988)
S - Stick-up protective steel outer casing
F - Flushmount protective outer casing
NJSPC NAD-83 - New Jersey State Plane Coordinates North American Datum 1983

TABLE 2

SUMMARY OF WELL DEVELOPMENT
SHERWIN-WILLIAMS
BURN SITE and RAIL ROAD SITE
Gibbsboro - NJ

Well No.	Date	Starting Depth to Groundwater (ft-bgs)	Purge Rate (gpm)	Initial Turbidity (NTU)	Final Turbidity (NTU)	Volume Pumped (gallon)	Pumping Duration (hr:min)	Total Pumping Time (hr:min)
BSMW0001	6/23/2005	3.5	0.6	>1000	400	25	0:25	1:05
	6/28/2005	3.44	1.0	>1000	17	25	0:40	
BSMW0002	6/28/2005	4.24	1.0	>1000	450	65	2:50	3.18
	7/18/2005	NM	NM	630	93	50	0:28	
BSMW0003	6/23/2005	0.85	1.5	>1000	33	45	0:30	0:30
BSMW0004	6/28/2005	3.89	1.2	>1000	34	50	1:23	1:23
BSMW0005	7/27/2005	3.63	1.0	>1000	6.9	68	1:25	1:25
BSMW0006	7/26/2005	2.12	1.7	>1000	14	75	1:18	1:18
BSMW0007	7/26/2005	1.76	1.7	>1000	14	60	1:14	1:14
RRMW0001	6/29/2005	2.13	1.5	>1000	500	50	2:01	4:16
	7/18/2005	2.1	NM	>1000	26	50	2:15	
RRMW0002	7/28/2005	2.1	0.6	>1000	33	55	1:55	1:55

NOTES:

NTU - Nephelometric Turbidity Unit
gpm - gallon per minute
ft-bgs - feet below ground surface
NM - Not Measured

TABLE 3

GROUNDWATER AND SURFACE WATER ELEVATION DATA
SHERWIN-WILLIAMS
BURN SITE and RAIL ROAD SITE
Gibbsboro - NJ

		Date:	10/11/2005		11/23/2005		1/5/2006		1/31/2006		2/20/2006		3/23/2006		9/12/2006	
LOCATION	Reference	Reference Elevation (ft-amsl)	TIC DTW (ft)	Elevation (ft)	DTW (ft)	Elevation (ft)	DTW (ft)	Elevation (ft)	DTW (ft)	Elevation (ft)	DTW (ft)	Elevation (ft)	DTW (ft)	Elevation (ft)	DTW (ft)	Elevation (ft)
Shallow Monitoring Wells																
BSMW0001	TIC	83.25	9.18***	74.07***	6.02	77.23	5.54	77.71	5.10	78.15	5.24	78.01	5.66	77.59	5.86	77.39
BSMW0002	TIC	82.05	6.22	75.83	6.30	75.75	5.96	76.09	6.06	75.99	6.10	75.95	6.31	75.74	6.26	75.79
BSMW0003	TIC	79.39	3.33	76.06	3.43	75.96	3.30	76.09	3.28	76.11	3.35	76.04	4.58	74.81	3.40	75.99
BSMW0004	TIC	82.22	6.80	75.42	6.89	75.33	5.61	76.61	6.58	75.64	6.60	75.62	4.62	77.60	6.78	75.44
BSMW0005	TIC	83.67	6.63	77.04	6.27	77.40	5.11	78.56	5.32	78.35	5.34	78.33	5.68	77.99	5.61	78.06
BSMW0006	TIC	86.22	4.10	82.12	4.16	82.06	3.35	82.87	3.25	82.97	3.22	83.00	3.98	82.24	3.80	82.42
BSMW0007	TIC	84.08	4.77	79.31	4.53	79.55	4.38	79.70	4.39	79.69	4.40	79.68	4.68	79.40	4.66	79.42
RRMW0001	TIC	79.71	4.70	75.01	4.30	75.41	4.00	75.71	3.98	75.73	4.03	75.68	4.35	75.36	4.21	75.50
RRMW0002	TIC	79.54	4.30	75.24	4.41	75.13	4.05	75.49	4.15	75.39	4.20	75.34	4.42	75.12	4.36	75.18
MW-7	TIC	82.81	4.21	78.60	3.95	78.86	3.09	79.72	3.45	79.36	5.21	77.60	4.00	78.81	3.78	79.03
MW-8	TIC	85.73	4.41	81.32	4.70	81.03	3.32	82.41	3.85	81.88	3.90	81.83	4.75	80.98	4.38	81.35
MW-9	TIC	88.83	8.05	80.78	7.70	81.13	6.88	81.95	7.19	81.64	7.25	81.58	7.76	81.07	7.55	81.28
Surface Water - ft-amsl																
BS-01*	CM-10	82.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77.84
BS-02*	CM-10	82.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	79.02
BS-03*	CM-10	82.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77.94
BS-04**	MW-40(TIC)	83.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	74.42
BS-05**	CM-09A	78.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	75.97
RR-01	RRMW0001(TOC)	80.44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	74.28
Deep Monitoring Well																
MW-40	TIC	83.21	4.80	78.41	4.35	78.86	4.16	79.05	3.50	79.71	3.51	79.70	4.00	79.21	NA	NA

NOTES:

TIC - Top of Inner Casing

TOC - Top of Outer Casing

DTW - Depth to Water

NA - No measurement

ft-amsl - feet above mean sea level

** - Honey Run

* - White Sand Branch

*** - DTW measurement is inconsistent with other tabulated events. Therefore, groundwater elevation data was not considered for contouring.

TABLE 4

SUMMARY OF HYDRAULIC CONDUCTIVITY TESTING
SHERWIN-WILLIAMS
BURN SITE and RAIL ROAD SITE
Gibbsboro - NJ

Well No.	Test No.	Falling Head	Rising Head	Bouwer & Rice (1976) (ft/d)	Hvorslev (1951) (ft/d)	Hyder et al. (KGS) (1994) (ft/d)	Dagan (1978) (ft/d)	Springer-Gelhar (1991) (ft/d)
BSMW0001	Slug-In1	X		0.786	1.388	0.374	0.950	0.632
	Slug-In2	X		0.793	1.268	0.121	1.183	0.281
	Slug-Out1		X	0.698	1.060	0.481	1.018	0.963
	Slug-Out2		X	0.851	1.091	0.519	0.780	0.613
Arithmetic Mean for all BSMW0001 tests using Bouwer and Rice:				**0.782**	n/a	n/a	n/a	n/a
Arithmetic Mean for all BSMW0001 tests using Hvorslev:				n/a	**1.202**	n/a	n/a	n/a
Arithmetic Mean for all BSMW0001 tests using Hyder et al.:				n/a	n/a	**0.374**	n/a	n/a
Arithmetic Mean for all BSMW0001 tests using Dagan:				n/a	n/a	n/a	**0.983**	n/a
Arithmetic Mean for all BSMW0001 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**0.622**
Arithmetic Mean for all BSMW0001 tests and methods:				**0.792**				
BSMW0002	Slug-In1	X		6.794	11.060	1.061	8.065	0.912
	Slug-In2	X		2.033	2.728	0.037	2.494	0.199
	Slug-Out1		X	4.113	7.628	0.634	6.093	0.634
	Slug-Out2		X	4.858	8.911	0.878	6.050	0.766
Arithmetic Mean for all BSMW0002 tests using Bouwer and Rice:				**4.450**	n/a	n/a	n/a	n/a
Arithmetic Mean for all BSMW0002 tests using Hvorslev:				n/a	**7.582**	n/a	n/a	n/a
Arithmetic Mean for all BSMW0002 tests using Hyder et al.:				n/a	n/a	**0.653**	n/a	n/a
Arithmetic Mean for all BSMW0002 tests using Dagan:				n/a	n/a	n/a	**5.676**	n/a
Arithmetic Mean for all BSMW0002 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**0.628**
Arithmetic Mean for all BSMW0002 tests and methods:				**3.797**				
BSMW0003	Slug-In1	X		0.975	1.539	1.219	1.192	1.020
	Slug-In2	X		0.575	0.908	0.768	0.702	0.736
	Slug-Out1		X	0.642	1.005	0.780	0.785	0.697
	Slug-Out2		X	0.702	1.109	0.840	0.861	0.707
Arithmetic Mean for all BSMW0003 tests using Bouwer and Rice:				**0.723**	n/a	n/a	n/a	n/a
Arithmetic Mean for all BSMW0003 tests using Hvorslev:				n/a	**1.140**	n/a	n/a	n/a
Arithmetic Mean for all BSMW0003 tests using Hyder et al.:				n/a	n/a	**0.902**	n/a	n/a
Arithmetic Mean for all BSMW0003 tests using Dagan:				n/a	n/a	n/a	**0.885**	n/a
Arithmetic Mean for all BSMW0003 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**0.790**
Arithmetic Mean for all BSMW0003 tests and methods:				**0.888**				
BSMW0004	Slug-In1	X		1.454	1.863	0.361	1.592	0.614
	Slug-In2	X		1.241	1.839	0.339	1.604	0.350
	Slug-Out1		X	0.951	1.353	0.871	1.004	0.406
	Slug-Out2		X	2.904	4.014	2.262	3.336	2.917
Arithmetic Mean for all BSMW0004 tests using Bouwer and Rice:				**1.638**	n/a	n/a	n/a	n/a
Arithmetic Mean for all BSMW0004 tests using Hvorslev:				n/a	**2.267**	n/a	n/a	n/a
Arithmetic Mean for all BSMW0004 tests using Hyder et al.:				n/a	n/a	**0.958**	n/a	n/a
Arithmetic Mean for all BSMW0004 tests using Dagan:				n/a	n/a	n/a	**1.884**	n/a
Arithmetic Mean for all BSMW0004 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**1.072**
Arithmetic Mean for all BSMW0004 tests and methods:				**1.564**				
BSMW0005	Slug-In1	X		18.160	28.330	2.283	20.510	1.760
	Slug-In2	X		31.810	57.880	2.924	39.430	2.506
	Slug-Out1		X	27.840	46.440	2.692	35.770	2.693
	Slug-Out2		X	33.550	55.070	3.258	36.210	3.290
Arithmetic Mean for all BSMW0005 tests using Bouwer and Rice:				**27.840**	n/a	n/a	n/a	n/a
Arithmetic Mean for all BSMW0005 tests using Hvorslev:				n/a	**46.930**	n/a	n/a	n/a
Arithmetic Mean for all BSMW0005 tests using Hyder et al.:				n/a	n/a	**2.789**	n/a	n/a
Arithmetic Mean for all BSMW0005 tests using Dagan:				n/a	n/a	n/a	**32.980**	n/a
Arithmetic Mean for all BSMW0005 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**2.562**
Arithmetic Mean for all BSMW0005 tests and methods:				**22.620**				
BSMW0006	Slug-In1	X		4.074	7.026	1.155	5.323	1.172
	Slug-In2	X		3.803	5.650	0.577	4.013	0.771
	Slug-Out1		X	2.150	3.655	0.701	2.799	0.833
	Slug-Out2		X	2.826	4.402	0.968	3.022	0.968
Arithmetic Mean for all BSMW0006 tests using Bouwer and Rice:				**3.213**	n/a	n/a	n/a	n/a
Arithmetic Mean for all BSMW0006 tests using Hvorslev:				n/a	**5.183**	n/a	n/a	n/a
Arithmetic Mean for all BSMW0006 tests using Hyder et al.:				n/a	n/a	**0.850**	n/a	n/a
Arithmetic Mean for all BSMW0006 tests using Dagan:				n/a	n/a	n/a	**3.789**	n/a
Arithmetic Mean for all BSMW0006 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**0.936**
Arithmetic Mean for all BSMW0006 tests and methods:				**2.794**				
BSMW0007	Slug-In1	X		3.575	6.317	0.986	4.676	1.005
	Slug-In2	X		3.914	6.598	0.709	4.859	0.709
	Slug-Out1		X	2.896	3.877	0.758	3.111	0.785
	Slug-Out2		X	2.958	4.315	0.806	3.281	0.806
Arithmetic Mean for all BSMW0007 tests using Bouwer and Rice:				**3.336**	n/a	n/a	n/a	n/a
Arithmetic Mean for all BSMW0007 tests using Hvorslev:				n/a	**5.277**	n/a	n/a	n/a
Arithmetic Mean for all BSMW0007 tests using Hyder et al.:				n/a	n/a	**0.815**	n/a	n/a
Arithmetic Mean for all BSMW0007 tests using Dagan:				n/a	n/a	n/a	**3.982**	n/a
Arithmetic Mean for all BSMW0007 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**0.826**
Arithmetic Mean for all BSMW0007 tests and methods:				**2.847**				
RRMW0001	Slug-In1	X		0.619	0.972	0.880	0.748	0.963
	Slug-In2	X		0.436	0.534	0.921	0.455	0.470
	Slug-Out1		X	0.304	0.478	0.307	0.365	0.601
	Slug-Out2		X	0.276	0.433	0.408	0.331	0.522
Arithmetic Mean for all RRMW0001 tests using Bouwer and Rice:				**0.409**	n/a	n/a	n/a	n/a
Arithmetic Mean for all RRMW0001 tests using Hvorslev:				n/a	**0.604**	n/a	n/a	n/a
Arithmetic Mean for all RRMW0001 tests using Hyder et al.:				n/a	n/a	**0.629**	n/a	n/a
Arithmetic Mean for all RRMW0001 tests using Dagan:				n/a	n/a	n/a	**0.475**	n/a
Arithmetic Mean for all RRMW0001 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**0.639**
Arithmetic Mean for all RRMW0001 tests and methods:				**0.551**				
RRMW0002	Slug-In1	X		2.482	3.943	0.554	2.734	0.587
	Slug-In2	X		2.495	4.482	0.598	2.966	0.645
	Slug-Out1		X	2.039	2.906	0.422	2.256	0.422
	Slug-Out2		X	2.053	3.068	0.456	2.257	0.456
Arithmetic Mean for all RRMW0002 tests using Bouwer and Rice:				**2.267**	n/a	n/a	n/a	n/a
Arithmetic Mean for all RRMW0002 tests using Hvorslev:				n/a	**3.600**	n/a	n/a	n/a
Arithmetic Mean for all RRMW0002 tests using Hyder et al.:				n/a	n/a	**0.508**	n/a	n/a
Arithmetic Mean for all RRMW0002 tests using Dagan:				n/a	n/a	n/a	**2.553**	n/a
Arithmetic Mean for all RRMW0002 tests using Springer-Gelhar:				n/a	n/a	n/a	n/a	**0.527**
Arithmetic Mean for all RRMW0002 tests and methods:				**1.891**				
SITE (Burn Site and Rail Road) SUMMARY (Geometric mean using applicable arithmetic means)								
Bouwer and Rice method (ft/d):				**2.186**	n/a	n/a	n/a	n/a
Hvorslev method (ft/d):				n/a	**3.430**	n/a	n/a	n/a
Hyder et al. (KGS) method (ft/d):				n/a	n/a	**0.797**	n/a	n/a
Dagan method (ft/d):				n/a	n/a	n/a	**2.609**	n/a
Springer-Gelhar method (ft/d):				n/a	n/a	n/a	n/a	**0.846**
All Site tests and methods (ft/d):				**1.816**				
Burn Site ONLY Summary (Geometric mean using Bouwer and Rice arithmetic means)								
Bouwer and Rice method (ft/d):				**2.763**	n/a	n/a	n/a	n/a
Rail Road Site ONLY Summary (Geometric mean using Bouwer and Rice arithmetic means)								
Bouwer and Rice method (ft/d):				**0.963**	n/a	n/a	n/a	n/a

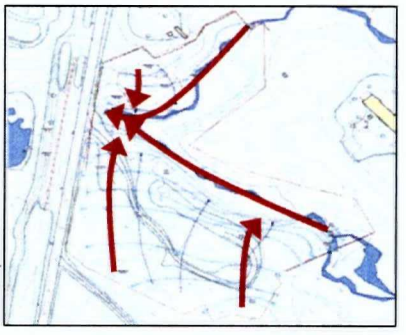
TABLE 5

SUMMARY OF GROUNDWATER SEEPAGE VELOCITIES
SHERWIN-WILLIAMS
BURN SITE
Gibbsboro - NJ

Bouwer and Rice Method					
Seepage Velocity Estimate	Parameter	Units	Area of Site (BS-05 to BS-04)		
			K = MW-0003	K = MW-0004	K = Burn Site Geometric Mean
	K	ft/day	0.723	1.638	2.763
Range	*dh/dl*	ft/ft	0.003	0.003	0.003
	v	**ft/day**	**0.007**	**0.017**	**0.029**
Seepage Velocity Estimate	Parameter	Units	Area of Site (MW-0001 to MW-0004)		
			K = MW-0001	K = MW-0004	K = Burn Site Geometric Mean
	K	ft/day	0.782	1.638	2.763
Range	*dh/dl*	ft/ft	0.017	0.017	0.017
	v	**ft/day**	**0.044**	**0.092**	**0.155**
Seepage Velocity Estimate	Parameter	Units	Area of Site (MW-0006 to MW-0005)		
			K = MW-0006	K = MW-0005	K = Burn Site Geometric Mean
	K	ft/day	3.213	27.840	2.763
Range	*dh/dl*	ft/ft	0.008	0.008	0.008
	v	**ft/day**	**0.087**	**0.752**	**0.075**
Seepage Velocity Estimate	Parameter	Units	Area of Site (MW-10 to MW-9)		
			K = MW-10 (MW-0006)	K = MW-9 (MW-0007)	K = Burn Site Geometric Mean
	K	ft/day	3.213	3.336	2.763
Range	*dh/dl*	ft/ft	0.017	0.017	0.017
	v	**ft/day**	**0.187**	**0.194**	**0.161**
Seepage Velocity Estimate	Parameter	Units	Area of Site (BS-03 to BS-04)		
			K = MW-0007	K = MW-0004	K = Burn Site Geometric Mean
	K	ft/day	3.336	1.638	2.763
Range	*dh/dl*	ft/ft	0.005	0.005	0.005
	v	**ft/day**	**0.054**	**0.027**	**0.045**

Notes:
v = seepage velocity
K = hydraulic conductivity
n = porosity = 0.3
dh/dl = horizontal hydraulic gradient

$$v = \frac{K(dh)}{n(dl)}$$



Northern Burn Site Area (White Sand Branch) - Horizontal hydraulic gradient and range of seepage velocities calculated using individual K values for BSMW0001, BSMW0004 and the site geometric mean calculated using the Bouwer & Rice method (Table 4).

Northern Burn Site Area (White Sand Branch) - BS-05 to BS-04 - Horizontal hydraulic gradient and range of seepage velocities calculated along axis of White Sand Branch using individual K values for BSMW0003, BSMW0004 and the site geometric mean calculated using the Bouwer & Rice method (Table 4).

Western Burn Site Area (United States Avenue) - Horizontal hydraulic gradient and range of seepage velocities calculated using individual K values for BSMW0005, BSMW0006 and the site geometric mean calculated using the Bouwer & Rice method (Table 4).

Southern Burn Site Area (Honey Run) - Horizontal hydraulic gradient and range of seepage velocities calculated using individual K values for BSMW0006, BSMW0007 and the site geometric mean calculated using the Bouwer & Rice method (Table 4).

Southern Burn Site Area (Honey Run) - BS-03 to BS-04 - Horizontal hydraulic gradient and range of seepage velocities calculated along axis of Honey Run using individual K values for BSMW0007, BSMW0004 and the site geometric mean calculated using the Bouwer & Rice method (Table 4).

TABLE 6

RATIONALE FOR PROPOSED MONITORING WELLS
SHERWIN-WILLIAMS
BURN SITE and RAIL ROAD SITE
Gibbsboro - NJ

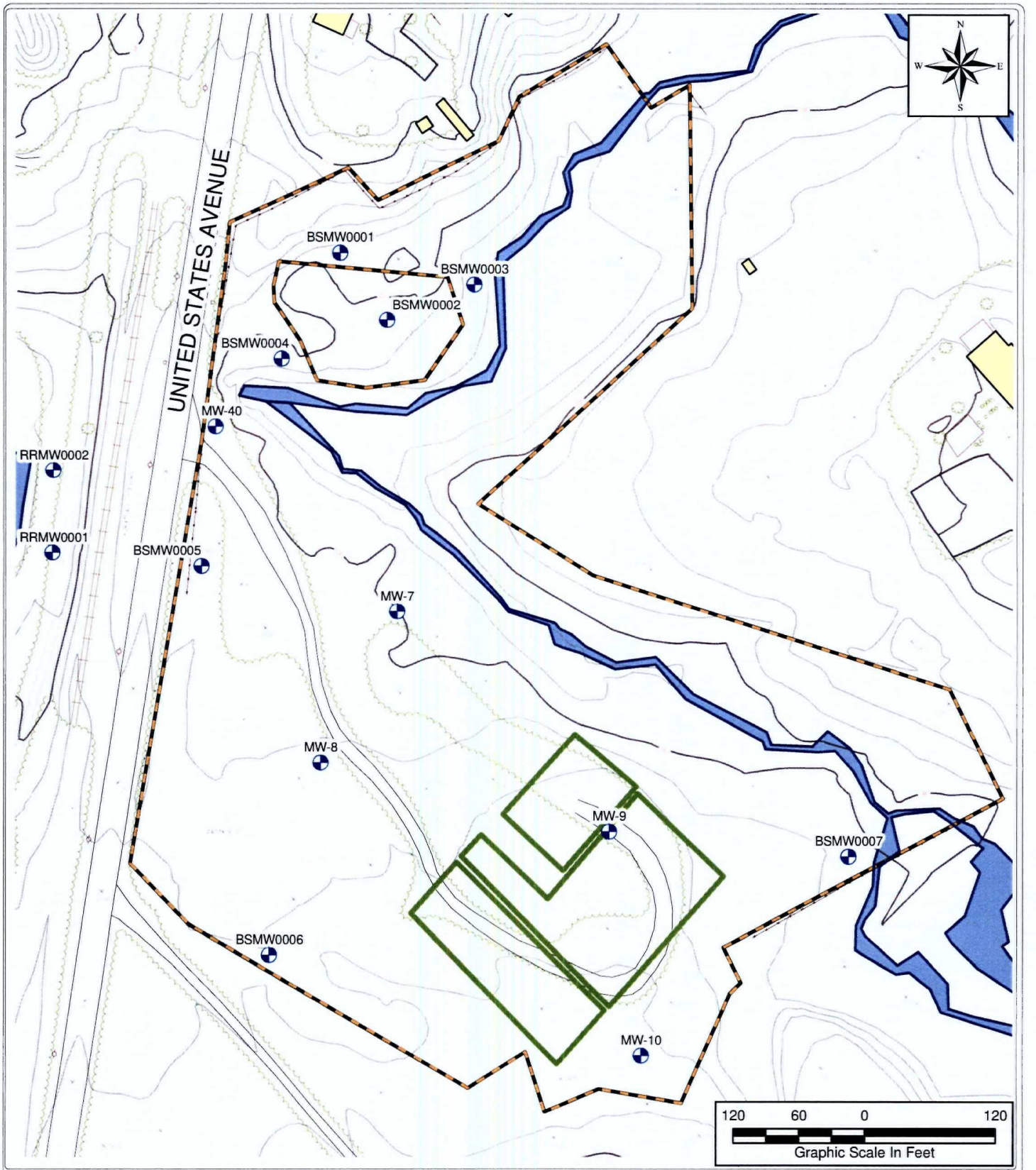
Existing Well Information							Proposed Well Information		
Well ID	Aquifer Designation	August and October 2005 Constituent				Screen Interval (ft bgs)	Screen Interval (ft bgs)	Aquifer Designation	Rationale
		Arsenic	Lead	Pentachlorophenol	Benzene				
BSMW0002	shallow	•	•	o	•	3-13	25-35	intermediate	Vertical delineation of As, Pb, & benzene within former Burn Area.
BSMW0004	shallow	•	•	o	o	3-13	25-35	intermediate	Vertical delineation of As & Pb down gradient of former Burn Area.
MW-7	shallow	•	•	•	o	5-15	25-35	intermediate	Vertical delineation of elevated As (highest at site), Pb, & PCP at down gradient portion of Southern Burn Site Area.
MW-9	shallow	•	•	o	•	10-20	30-40	intermediate	Vertical delineation within the former landfill located in Southern Burn Site Area. Location of highest shallow benzene
MW-40	deep	--	--	--	--	63-73	5-15	shallow	Shallow sample at Burn Site discharge location.
							25-35	intermediate	Intermediate sample at Burn Site discharge location.
RRMW0001	shallow	•	o	o	o	2-12	25-35	intermediate	Vertical delineation of As exceedances.

NOTES:

- • Exceed 2007 NJDEP Ground Water Quality Standard. As, Pb, Pentachlorophenol, and benzene are the only exceedances considered for delineation.
- o Did not exceed 2007 NJDEP Ground Water Quality Standard.
- -- Not sampled during 2005.

All proposed monitoring wells can be used with existing monitoring well to calculate local vertical hydraulic gradients.

Figures



LEGEND:

Monitoring Well Location

Approximate Extent of Former Landfill Area

TITLE:

Burn Site
Monitoring Well Location Map

PROJECT: Sherwin-Williams Gibbsboro
Remedial Investigation

CLIENT NAME: The Sherwin-Williams Company

WESTON SOLUTIONS

DATE: 08/14/2009

FIGURE #: 1

L:\SHERWIN\GIS\MXD\0109_Burnsite\06505_BW_MW.mxd

N

BSMW0001 (77.23)
BSMW0002 (75.75)
BSMW0003 (75.96)
BSMW0004 (75.33)
BSMW0005 (77.4)
BSMW0006 (82.06)
BSMW0007 (79.55)
MW-7 (78.86)
MW-8 (81.03)
MW-9 (81.13)
MW-10 (84.8)
RRMW0001 (75.41)
RRMW0002 (75.13)

Legend

BSMW 001 (91.33) Monitoring Well (Groundwater Elevation in feet AMSL)

90 Groundwater Contour (feet AMSL)

90 Inferred Groundwater Contour (feet AMSL)

Groundwater Flow Direction

Fence Line

NOTE: Surface water elevation measurement points not established at the time of this event.

50 25 0 50
Graphic Scale In Feet

WESTON SOLUTIONS SM

Weston Solutions, Inc.
205 Campus Drive Edison, New Jersey 08837-3939
TEL: (732) 417-5800 Fax: (732) 417-5801
http://www.westonsolutions.com

SHERWIN WILLIAMS — COVER THE EARTH

REPORT DATE: August 2009	PROJECT MANAGER: S. Jones	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: BURN SITE GROUNDWATER CONTOUR MAP NOVEMBER 23, 2005
DRAWING: 06358_BS_GW_Cont_112305.mxd PATH: L:\SHERWIN\GIS\MXD\0109_Burnsite\	CHECKED BY: A. Fischer		
REVISION No. 0	CONTRACT No. DELIVERY ORDER NO.	PROJECT NAME: Sherwin-Williams Gibbsboro Remedial Investigation	FIGURE: 2 / SCALE: 1" = 50' / DATE: 8/14/2009
WORK ORDER No. 20076.022.077.0005	DRAWN/MODIFIED BY: S. Poultney DATE CREATED: 06/03/2009		

N

BSMW0001 (78.15)
BSMW0002 (75.99)
BSMW0003 (76.11)
BSMW0004 (75.64)
BSMW0005 (78.25)
BSMW0006 (82.97)
BSMW0007 (79.69)
MW-7 (79.36)
MW-8 (81.88)
MW-9 (81.64)
MW-10 (85.52)
RRMW0001 (75.73)
RRMW0002 (75.39)

Legend

BSMW 001 (91.33) Monitoring Well
(Groundwater Elevation in feet AMSL)
90 Groundwater Contour (feet AMSL)
90 Inferred Groundwater Contour (feet AMSL)
Groundwater Flow Direction
Fence Line

NOTE: Surface water elevation measurement points not established at the time of this event.

50 25 0 50
Graphic Scale In Feet

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205 Campus Drive Edison, New Jersey 08837-3939
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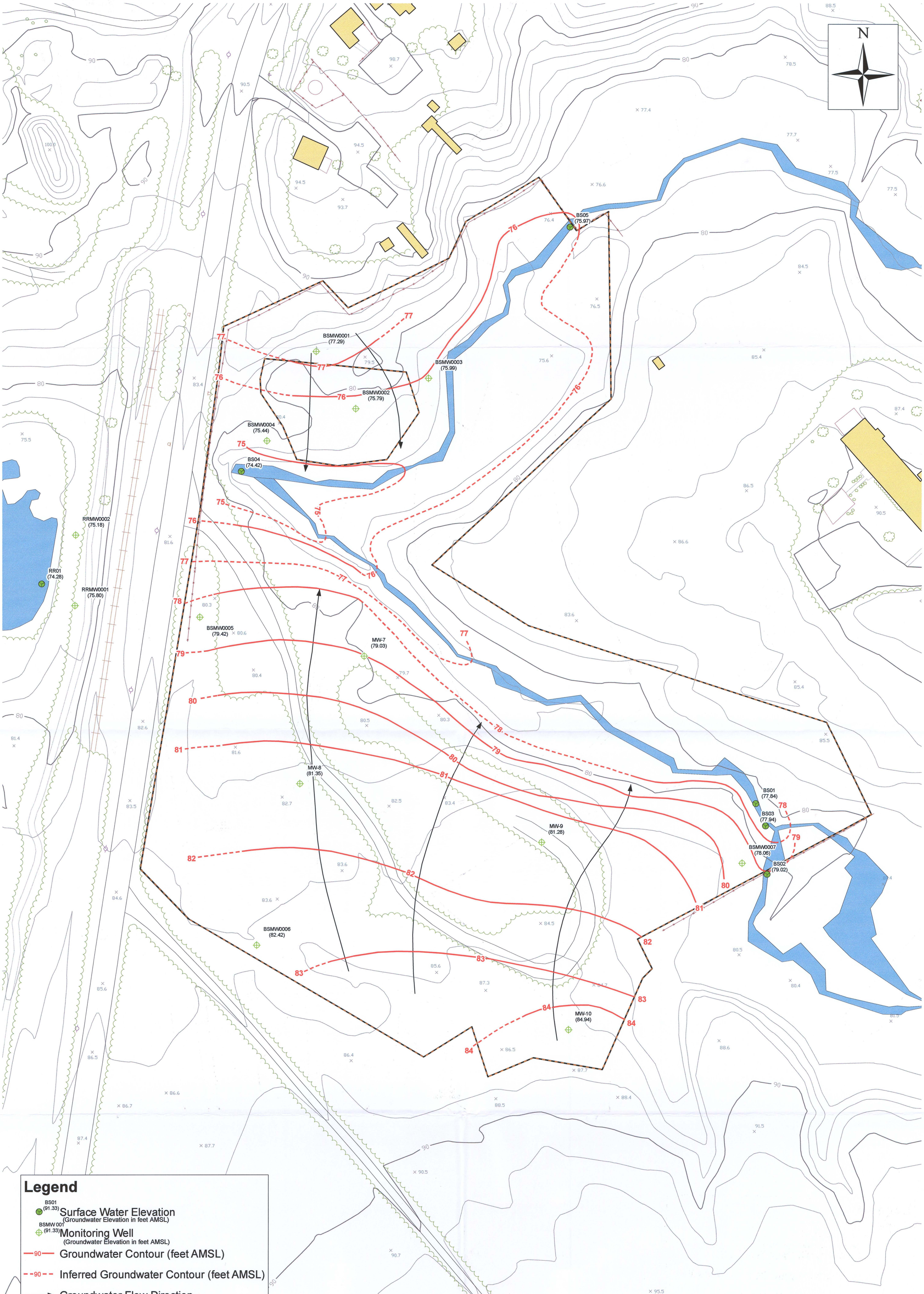
http://www.westonsolutions.com

SHERWIN WILLIAMS

REPORT DATE: August 2009	PROJECT MANAGER: S. Jones	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: BURN SITE GROUNDWATER CONTOUR MAP JANUARY 31, 2006
DRAWING: 06359_BS_GW_Cont_013106.mxd PATH: L:\SHERWIN\GIS\MXD\0109_Burnsite\	CHECKED BY: A. Fischer		
REVISION No.: 0	CONTRACT No. / DELIVERY ORDER NO.	PROJECT NAME: Sherwin-Williams Gibbsboro Remedial Investigation	
WORK ORDER No.: 20076.022.077.0005	DRAWN/MODIFIED BY: S. Poultney DATE CREATED: 06/03/2009		FIGURE: 3 / SCALE: 1" = 50' / DATE: 8/14/2009



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SHERWIN Williams

REPORT DATE: August 2009	PROJECT MANAGER: S. Jones	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: BURN SITE GROUNDWATER CONTOUR MAP SEPTEMBER 12, 2006
DRAWING: 06306_BS_GW_Cont_091206.mxd PATH: L:\SHERWIN\GIS\MXD\0109_Burnsite\	CHECKED BY: A. Fischer		
REVISION No. 0	CONTRACT No. DELIVERY ORDER NO.	PROJECT NAME: Sherwin-Williams Gibbsboro Remedial Investigation	FIGURE: 4 / SCALE: 1" = 50' / DATE: 8/14/2009
WORK ORDER No. 20076.022.077.0005	DRAWN/MODIFIED BY: S. Poultney DATE CREATED: 06/03/2009		

N

BSMW0004 [08-2005]
ALUMINUM, TOTAL 211 J UG/L (200)
ARSENIC, TOTAL 15.3 UG/L (3)
CHLORIDE 438000 UG/L (250000)
IRON, TOTAL 32300 UG/L (300)
MANGANESE, TOTAL 1680 UG/L (50)
SODIUM, TOTAL 251000 UG/L (50000)
BSMW0004 [10-2005]
ALUMINUM, TOTAL 238 UG/L (200)
ARSENIC, TOTAL 10.1 UG/L (3)
CHLORIDE 432000 UG/L (250000)
IRON, TOTAL 32300 UG/L (300)
LEAD, TOTAL 8.6 J UG/L (5)
MANGANESE, TOTAL 1640 UG/L (50)
SODIUM, TOTAL 243000 UG/L (50000)

BSMW0001 [08-2005]
ALUMINUM, TOTAL 1340 J UG/L (200)
IRON, TOTAL 439 UG/L (300)
MANGANESE, TOTAL 155 UG/L (50)
SODIUM, TOTAL 62500 UG/L (50000)
BSMW0001 [10-2005]
ALUMINUM, TOTAL 1520 UG/L (200)
BETA-BHC 0.08 J UG/L (0.04)
IRON, TOTAL 829 UG/L (300)
MANGANESE, TOTAL 187 UG/L (50)
SODIUM, TOTAL 52800 UG/L (50000)

BSMW0002 [08-2005]
ALUMINUM, TOTAL 888 J UG/L (200)
BENZENE 7 J UG/L (1)
IRON, TOTAL 13500 UG/L (300)
LEAD, TOTAL 210 UG/L (5)
MANGANESE, TOTAL 552 UG/L (50)
SODIUM, TOTAL 50700 UG/L (50000)
BSMW0002 [10-2005]
ALUMINUM, TOTAL 770 UG/L (200)
ARSENIC, TOTAL 5 J UG/L (3)
BENZENE 6 J UG/L (1)
IRON, TOTAL 12100 UG/L (300)
LEAD, TOTAL 153 UG/L (5)
MANGANESE, TOTAL 491 UG/L (50)
SODIUM, TOTAL 52000 UG/L (50000)

BSMW0003 [08-2005]
ARSENIC, TOTAL 4.9 J UG/L (3)
BENZENE 12 J UG/L (1)
IRON, TOTAL 101000 UG/L (300)
LEAD, TOTAL 27 UG/L (5)
MANGANESE, TOTAL 552 UG/L (50)
BSMW0003 [10-2005]
ALUMINUM, TOTAL 203 UG/L (200)
BENZENE 9 J UG/L (1)
BENZENE 12 UG/L (1)
IRON, TOTAL 95200 UG/L (300)
IRON, TOTAL 96800 UG/L (300)
LEAD, TOTAL 41.4 UG/L (5)
LEAD, TOTAL 46.6 UG/L (5)
MANGANESE, TOTAL 534 UG/L (50)
MANGANESE, TOTAL 545 UG/L (50)

RRMW0002 [08-2005]
ARSENIC, TOTAL 6.4 J UG/L (3)
IRON, TOTAL 41700 UG/L (300)
MANGANESE, TOTAL 197 UG/L (50)
RRMW0002 [09-2005]
ARSENIC, TOTAL 5.8 J UG/L (3)
ARSENIC, TOTAL 8 J UG/L (3)
IRON, TOTAL 42200 UG/L (300)
IRON, TOTAL 43200 UG/L (300)
MANGANESE, TOTAL 199 UG/L (50)
MANGANESE, TOTAL 202 UG/L (50)

MW-7 [08-2005]
ARSENIC, TOTAL 1340 UG/L (3)
BARIUM, TOTAL 2330 UG/L (2000)
BIS(2-ETHYLHEXYL) PHTHALATE 27 UG/L (3)
IRON, TOTAL 9090 UG/L (300)
LEAD, TOTAL 98.9 UG/L (5)
MANGANESE, TOTAL 135 UG/L (50)
PENTACHLOROPHENOL 3.8 UG/L (0.3)
PENTACHLOROPHENOL 4 J UG/L (0.3)
MW-7 [10-2005]
ARSENIC, TOTAL 1490 UG/L (3)
BARIUM, TOTAL 2390 UG/L (2000)
BENZENE 2 J UG/L (1)
IRON, TOTAL 8480 UG/L (300)
LEAD, TOTAL 100 UG/L (5)
MANGANESE, TOTAL 151 UG/L (50)
PENTACHLOROPHENOL 0.9 J UG/L (0.3)

RRMW0001 [08-2005]
ARSENIC, TOTAL 4.7 J UG/L (3)
ARSENIC, TOTAL 4.8 J UG/L (3)
IRON, TOTAL 46800 UG/L (300)
IRON, TOTAL 47500 UG/L (300)
MANGANESE, TOTAL 145 UG/L (50)
MANGANESE, TOTAL 147 UG/L (50)
RRMW0001 [09-2005]
ARSENIC, TOTAL 6.8 J UG/L (3)
IRON, TOTAL 52500 UG/L (300)
MANGANESE, TOTAL 155 UG/L (50)

UNITED STATES AVENUE

BSMW0005 [08-2005]
IRON, TOTAL 3720 UG/L (300)
LEAD, TOTAL 20.1 UG/L (5)
MANGANESE, TOTAL 187 UG/L (50)
BSMW0005 [09-2005]
IRON, TOTAL 4300 UG/L (300)
LEAD, TOTAL 19.5 UG/L (5)
MANGANESE, TOTAL 206 UG/L (50)

BSMW0007 [08-2005]
ALUMINUM, TOTAL 860 J UG/L (200)
IRON, TOTAL 2700 UG/L (300)
BSMW0007 [09-2005]
ALUMINUM, TOTAL 254 UG/L (200)
IRON, TOTAL 1460 UG/L (300)

MW-8 [08-2005]
ALUMINUM, TOTAL 690 J UG/L (200)
ARSENIC, TOTAL 5.9 J UG/L (3)
IRON, TOTAL 3960 UG/L (300)
MANGANESE, TOTAL 183 UG/L (50)
MW-8 [10-2005]
ALUMINUM, TOTAL 1730 UG/L (200)
ARSENIC, TOTAL 9.6 J UG/L (3)
IRON, TOTAL 8260 UG/L (300)
LEAD, TOTAL 9.2 J UG/L (5)
MANGANESE, TOTAL 304 UG/L (50)

BSMW0006 [08-2005]
ALUMINUM, TOTAL 1020 J UG/L (200)
IRON, TOTAL 13900 UG/L (300)
BSMW0006 [09-2005]
ALUMINUM, TOTAL 1330 UG/L (200)
IRON, TOTAL 13900 UG/L (300)
THALLIUM, TOTAL 5.5 J UG/L (2)

MW-10 [08-2005]
ALUMINUM, TOTAL 1540 J UG/L (200)
IRON, TOTAL 2920 UG/L (300)
MW-10 [10-2005]
ALUMINUM, TOTAL 724 UG/L (200)
IRON, TOTAL 2790 UG/L (300)

MW-9 [08-2005]
ARSENIC, TOTAL 8.4 J UG/L (3)
BENZENE 19 UG/L (1)
IRON, TOTAL 14700 UG/L (300)
LEAD, TOTAL 76.4 UG/L (5)
MANGANESE, TOTAL 122 UG/L (50)
MERCURY, TOTAL 2.1 UG/L (2)
MW-9 [10-2005]
ARSENIC, TOTAL 7.1 J UG/L (3)
BARIUM, TOTAL 2080 UG/L (2000)
BENZENE 42 UG/L (1)
IRON, TOTAL 28300 UG/L (300)
LEAD, TOTAL 17.1 UG/L (5)
MANGANESE, TOTAL 222 UG/L (50)

LEGEND:
- Groundwater Sample Locations with Exceedances
- Approximate Burn Site Outer Fence Boundary
- Approximate Extent of Former Burn Area
- Approximate Extent of Former Landfill Area

50 0 50 100 Feet

Note:
In the June 19, 2006 "Evaluation of Strategic Sampling Results" for the Burn Site, monitoring wells BSMW0005 and BSMW0007 and associated data were transposed on the orginal figure. This revised figure depicts the above-referenced monitoring wells in their corrected locations.

WESTON SOLUTIONS SM
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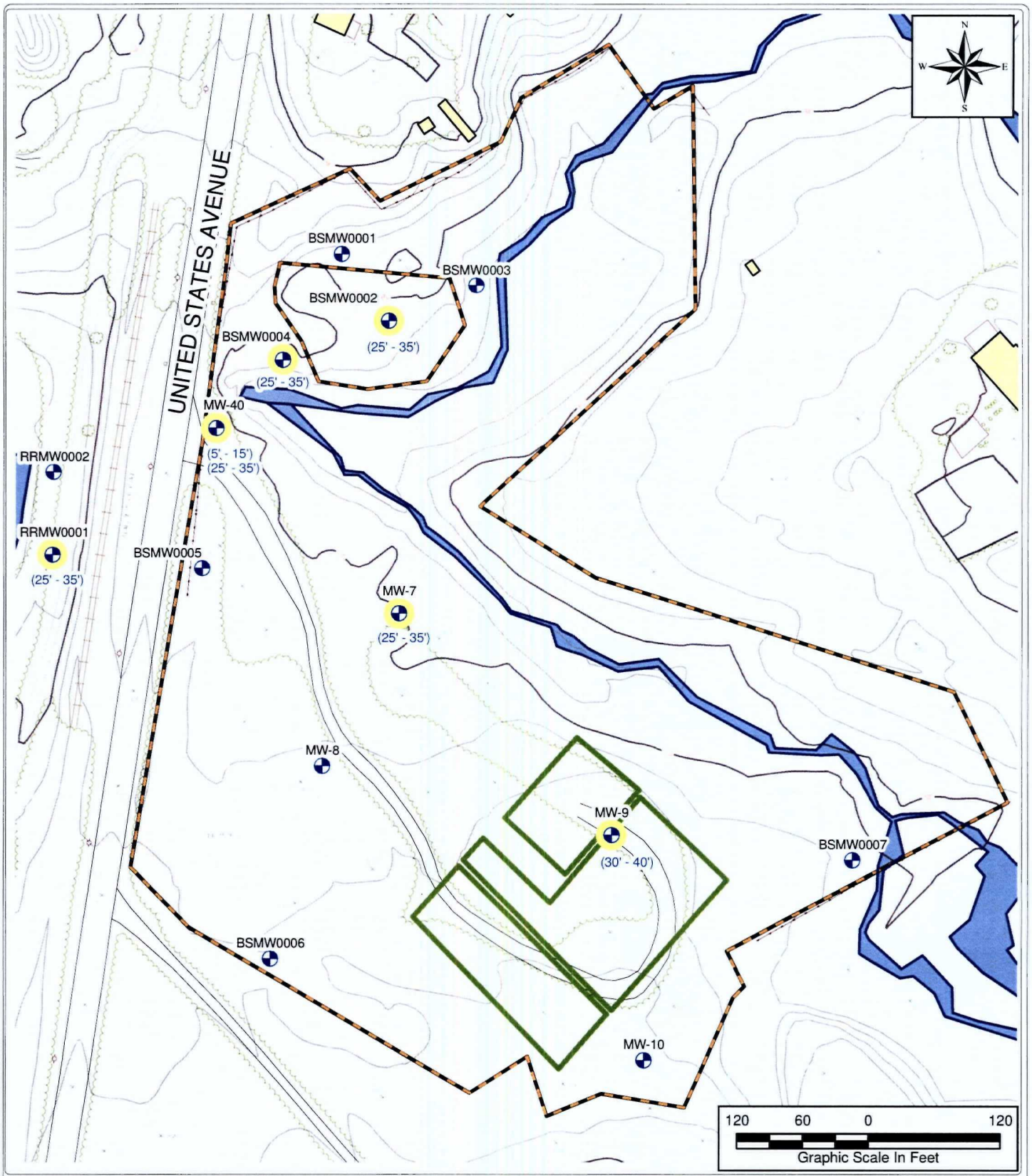
http://www.westonsolutions.com

SHERWIN WILLIAMS

REPORT DATE: AUGUST 2009	PROJECT MANAGER: S. JONES	CLIENT NAME: The Sherwin-Williams Company	DRAWING TITLE: BURN SITE GROUNDWATER SAMPLES ROUND 1 (AUGUST 2005) AND ROUND 2 (SEPTEMBER/OCTOBER 2005) EXCEEDANCES (ALL PARAMETERS) [REVISED WELL LOCATIONS]
DRAWING: 06958_BS_GW_Exceedances.apr PATH: L:\SHERWIN\GIS\Apr\0606_Burn_Site\	CHECKED BY: A. FISCHER		
REVISION No. 0	CONTRACT No. DELIVERY ORDER NO.	PROJECT NAME: Sherwin-Williams Gibbsboro Remedial Investigation	FIGURE: 5 / SCALE: 1" = 100' / DATE: 08/14/2009
WORK ORDER No. 20076.022.073.0005	DRAWN/MODIFIED BY: A.SALAZAR DATE CREATED: 08/11/2009		



LEGEND:

- Proposed Co-Located Monitoring Well Location
- (25' - 35') Proposed Monitoring Well Screen Interval (Feet bgs)
- Monitoring Well Location
- Approximate Extent of Former Landfill Area

TITLE:

Burn Site
Proposed Monitoring Well Location Map

PROJECT: Sherwin-Williams Gibbsboro Remedial Investigation

CLIENT NAME: The Sherwin-Williams Company

WESTON SOLUTIONS

DATE: 8/14/2009

FIGURE #: 5

L:\SHERWIN\GIS\MXD\0109_Burnsite\06506_BS_Prop_MW.mxd

Attachment 1:
Soil Boring and Monitoring Well Construction Logs
(included on CD)

Contents

Notes:

No monitoring well construction logs are available for MW-7, MW-8, MW-9 and MW-10.

Each "Log of Borehole" includes a soil boring log and monitoring well construction diagram.

Attachment 2:
Monitoring Well Permits, Monitoring Well Records, and Monitoring Well Certification-Form A- As-Built Certifications
(included on CD)

Contents

NJDEP Monitoring Well Permits*, approved June 10, 2005 (1 page)
NJDEP Monitoring Well Permits**, approved June 27, 2005 (1 page)
"Test Boring Location Plot Plan, Dated June 6, 1981, Annotated by R. Costa 10/12/06 (1 page)

Well ID	Monitoring Well Record	Monitoring Well Form A	Total No. pages
MW-7 (Formerly MW-12)	•	NA	1
MW-8 (Formerly MW-13)	•	NA	1
MW-9 (Formerly MW-11)	•	NA	1
MW-10	•	NA	1
MW-40	•	NA	1
BSMW0001	•	•	2
BSMW0002	•	•	2
BSMW0003	•	•	2
BSMW0004	•	•	2
BSMW0005	•	•	2
BSMW0006	•	•	2
BSMW0007	•	•	2
RRMW0001	•	•	2
RRMW0002	•	•	2

Notes:

X = Included in this Attachment
NA = Not Available
No NJDEP Well Permits were available for MW-7, MW-8, MW-9, MW-10, and MW-40.

* Monitoring Well Permit nos. for "BWMW001", "BWMW002", and "BSMW001" through "BSMW004" are issued on single NJDEP Monitoring Well Permit form DWR-133M.

** Monitoring Well Permit nos. for "BSMW005", "BSMW006", and "BSMW007" are issued on single NJDEP Monitoring Well Permit form DWR-133M.

The drillers used a 3-numeral suffix for the well IDs, whereas Weston used a 4-numeral suffix. Therefore, as an example, "BSM001" referenced by the driller is the same monitoring well as "BSMW0001" referenced by Weston.

The "BWMW" prefix used by the driller is equivalent to the "RRMW" prefix used by Weston. Therefore, as an example, "BWMW001" referenced by the driller is the same monitoring well as "RRMW0001" referenced by Weston.

Attachment 3:
Monitoring Well Certification-Form B- Location Certifications
(included on CD)

Contents

Well ID	Form B (dated 5/23/06)	Total No. pages
MW-7	NA	0
MW-8	NA	0
MW-9	NA	0
MW-10	NA	0
MW-40	NA	0
BSMW0001*	•	1
BSMW0002*	•	1
BSMW0003*	•	1
BSMW0004*	•	1
BSMW0005*	•	1
BSMW0006*	•	1
BSMW0007*	•	1
RRMW0001*	•	1
RRMW0002*	•	1

Notes:

• = Form B included in this attachment
NA = Not Available

* The surveyor used a hyphen between the letters and numbers of the alpha-numeric owner's well ID number; whereas no hyphen was used be Weston. Therefore, as an example, "BSMW-0001" referenced by the surveyor is the same monitoring well as "BSMW0001" referenced by Weston.

Attachment 4:
AQTESOLV's Definitions and Assumptions for "Solutions for Slug Tests in an Unconfined Aquifer"
(included on CD)

Contents

Method	AQTESOLV's Definitions and Assumptions	Total No. pages
Bouwer-Rice (1976)	●	3
Dagan (1978)	●	3
Hvorslev (1951)	●	2
Hyder et al. (1994)	●	4
Springer-Gelhar (1991)	●	4

Note: ● = Definitions and assumptions included in this attachment

Attachment 5:
Hydraulic Conductivity Tests
Graphical Solutions and Statistical Evaluation
(included on CD)

Contents

Well ID	Test Type	Trial	Bouwer-Rice (1976)	Hvorslev (1957)	Hyder et al. (KGS) (1994)	Dagan (1978)	Springer-Gelhar (1991)	Total No. pages
BSMW001	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
BSMW002	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
BSMW003	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
BSMW004	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
BSMW005	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5

Well ID	Test Type	Trial	Bouwer-Rice (1976)	Hvorslev (1957)	Hyder et al. (KGS) (1994)	Dagan (1978)	Springer-Gelhar (1991)	Total No. pages
BSMW006	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
BSMW007	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
RRMW0001	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
RRMW0002	Falling Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5
	Rising Head	1	•	•	•	•	•	5
		2	•	•	•	•	•	5

Notes:
• = graphical solution included in this attachment
No slug tests were conducted at MW-7, MW-8, MW-9, and MW-10.

ATTACHMENT 5, TABLE 1

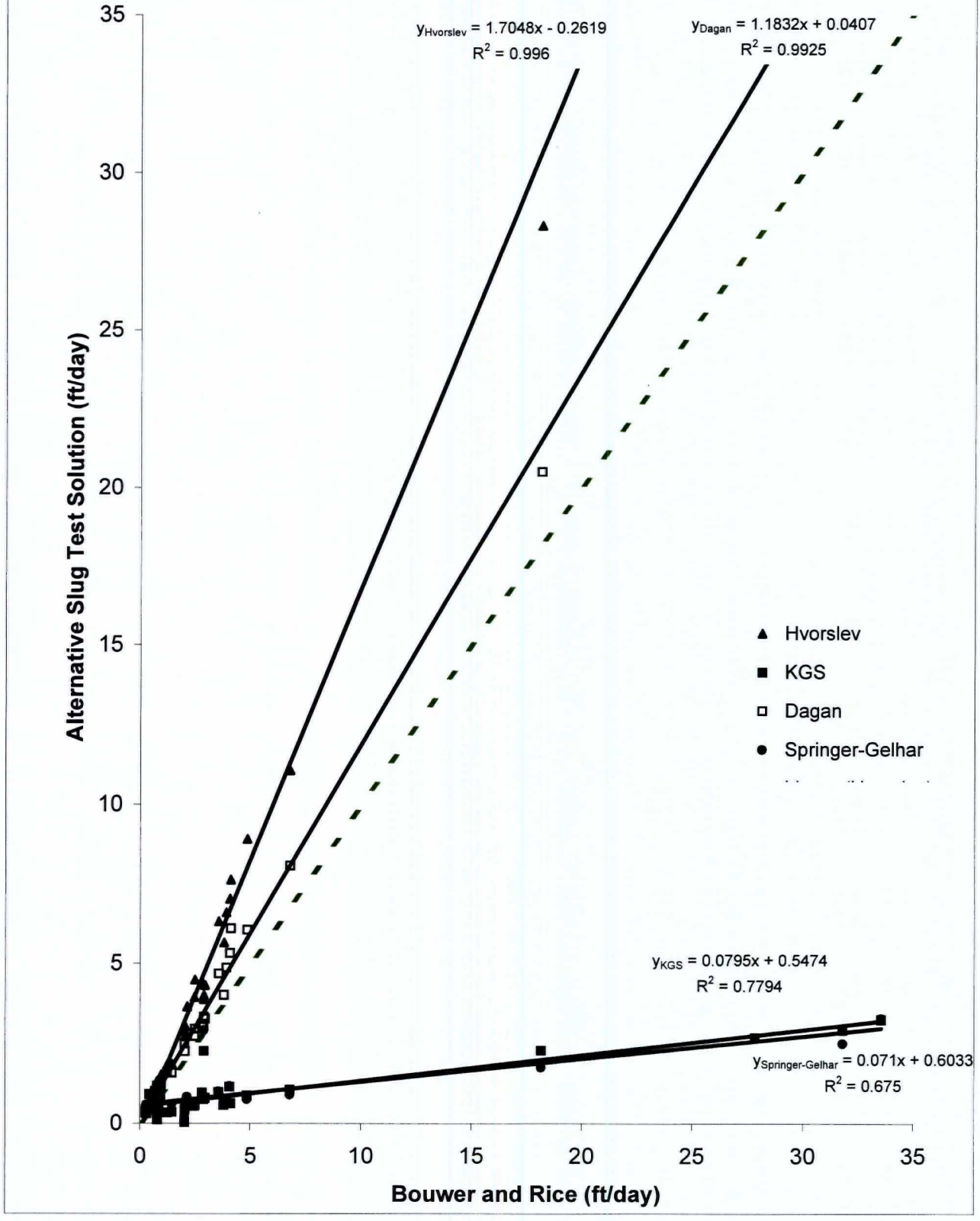
PRECISION BASED ON RELATIVE STANDARD DEVIATION (RSD)
SHERWIN-WILLIAMS
BURN SITE and RAIL ROAD SITE
Gibbsboro - NJ

Well No.	Statistic	Bouwer & Rice (1976)	Hvorslev (1951)	Hyder et al. (KGS) (1994)	Dagan (1978)	Springer-Gelhar (1991)
BSMW0001	N	4	4	4	4	4
	Median (ft/day)	0.790	1.180	0.428	0.984	0.623
	Standard Deviation	0.064	0.135	0.190	0.167	0.279
	RSD	8.1%	11.5%	44.4%	17.0%	44.8%
BSMW0002	N	4	4	4	4	4
	Median (ft/day)	4.486	8.270	0.756	6.072	0.700
	Standard Deviation	1.968	3.620	0.461	2.365	0.319
	RSD	43.9%	43.8%	61.1%	38.9%	45.5%
BSMW0003	N	4	4	4	4	4
	Median (ft/day)	0.672	1.057	0.672	0.823	0.722
	Standard Deviation	0.185	0.294	0.185	0.226	0.173
	RSD	27.6%	27.8%	27.6%	27.5%	24.0%
BSMW0004	N	4	4	4	4	4
	Median (ft/day)	1.348	1.851	0.616	1.598	1.598
	Standard Deviation	0.931	1.282	0.931	1.060	1.060
	RSD	69.1%	69.2%	151.2%	66.4%	66.4%
BSMW0005	N	4	4	4	4	4
	Median (ft/day)	29.825	50.755	2.808	35.990	2.600
	Standard Deviation	7.253	14.034	0.410	9.157	0.632
	RSD	24.3%	27.7%	14.6%	25.4%	24.3%
BSMW0006	N	4	4	4	4	4
	Median (ft/day)	3.315	6.658	0.834	3.518	0.901
	Standard Deviation	0.896	1.490	0.261	1.193	0.182
	RSD	27.0%	22.4%	31.3%	33.9%	20.2%
BSMW0007	N	4	4	4	4	4
	Median (ft/day)	3.267	5.316	0.782	3.979	0.796
	Standard Deviation	0.499	1.381	0.126	0.913	0.131
	RSD	15.3%	26.0%	16.2%	22.9%	16.5%
RRMW0001	N	4	4	4	4	4
	Median (ft/day)	0.370	0.506	0.644	0.410	0.561
	Standard Deviation	0.163	0.274	0.317	0.204	0.240
	RSD	44.1%	54.1%	49.2%	49.6%	42.8%
RRMW0002	N	4	4	4	4	4
	Median (ft/day)	2.268	3.506	0.505	2.734	0.522
	Standard Deviation	0.256	0.752	0.082	0.362	0.106
	RSD	11.3%	21.4%	16.3%	13.2%	20.3%

Precision Rating: Based on RSD (Relative Standard Deviation)

High Precision:	RSD 0% - 5%
Moderate Precision:	RSD 5% - 10%
Low Precision:	RSD 10% - 20%
Very Low Precision:	RSD >20%

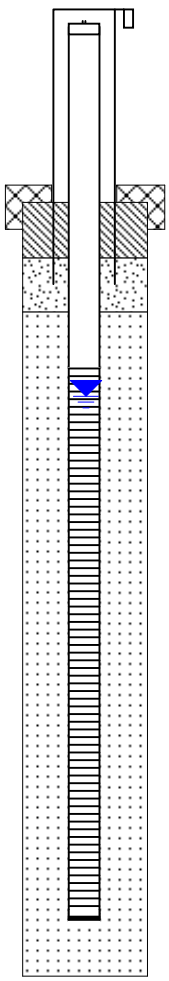
Attachment 5, Figure 1:
Linear Correlation Plot of Slug Test Data
Sherwin-Williams
Burn Site and Rail Road Site Wells
Gibbsboro, NJ



WESTON SOLUTIONS
Restoring Resource Efficiency
205 Campus Drive
Edison, NJ 08837
Phone: (732) 417-5800
Fax: (732) 417-5801

Log of Borehole: BSMW0001

Project: Gibbsboro - Burn Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070254
Date Started: 6/16/05
Easting: 361918.891
Geologist/Logger: Gil Mello
Date Completed: 6/20/05
Northing: 364838.043

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
80.1	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
79.1	1		Light gray medium SAND. Moist, loose.	SP		70	0	
75.1	5		Light grayish-yellow medium to fine SAND. wet, loose.	SP		100	0	3.5 ft bgs - Static groundwater on 6/23/05 before well development.
65.1	15		Moderate grayish-yellow medium to fine SAND, some silt. Wet, loose.	SM		90	0	
	16		End of Borehole					

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 83.57'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +3.17' - 3.0' bgs
Inner Casing Elevation (amsl): 83.25'
Screen / Slot Size: PVC 10 slot
SC-Interval: 3.0' - 13.0' bgs
Ground Elevation (amsl): 80.08'
Casing Grout Type: Concrete
GT-Interval: +0.5' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 1.0' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 1.0' - 2.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 2.0' - 13.0' bgs

WELL DEVELOPMENT:

Date: 6/23/05 and 6/28/05
Initial Depth to Water: 3.50' bgs
Pumping Rate: 1.0 gpm
Method: Overpumping
Final Water Turbidity: 17 NTU
Purged Volume: 50 gal

WESTON SOLUTIONS
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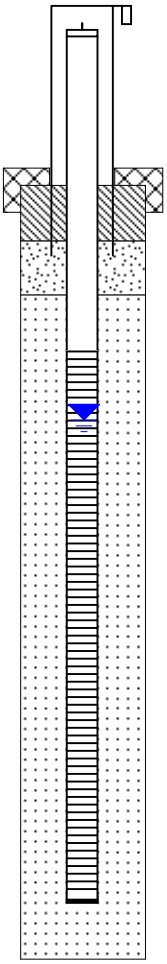
Log of Borehole: BSMW0002

Project: Gibbsboro - Burn Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070255
Date Started: 6/20/05
Easting: 361961.169
Geologist/Logger: Gil Mello
Date Completed: 6/20/05
Northing: 364775.280

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
79.3	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
78.3	1		Strong yellowish-green medium to coarse SAND, some silt. Dry, stiff. Soil discoloration.	SM				
			Dark brown medium to coarse SAND. Cinders. Dry, firm.	SP		50	0	
74.3	5		Dark brown medium SAND, little silt and clay. Peat. Wet, soft.	SM				4.24 ft bgs - Static groundwater on 6/28/05 before well development.
72.8	6		Weak yellowish-brown fine SAND, some silt, little clay. Wet, firm.	SM		60	0	
	10					100	0	
64.3	15		End of Borehole					

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 82.60'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +2.71' - 3.0' bgs
Inner Casing Elevation (amsl): 82.05'
Screen / Slot Size: PVC 10 slot
SC-Interval: 3.0' - 13.0' bgs
Ground Elevation (amsl): 79.34'
Casing Grout Type: Concrete
GT-Interval: +0.5' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 1.0' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 1.0' - 2.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 2.0' - 14.0' bgs

WELL DEVELOPMENT:

Date: 6/28/05 and 7/18/05
Initial Depth to Water: 4.24' bgs
Pumping Rate: 2.0 gpm
Method: Overpumping
Final Water Turbidity: 93 NTU
Purged Volume: 115 gal

WESTON SOLUTIONS
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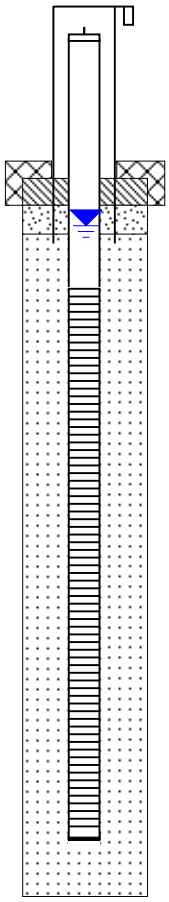
Phone: (732) 417-5800
Fax: (732) 417-5801

Log of Borehole: BSMW0003

Project: Gibbsboro - Burn Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070256
Date Started: 6/20/05
Easting: 362042.780
Geologist/Logger: Gil Mello
Date Completed: 6/20/05
Northing: 364808.974

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
76.9	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
75.9	1		Strong brownish-black medium to coarse SAND, little gravel. Peat (top 3"). Wet, loose.	SM				0.85 ft bgs - Static groundwater on 6/23/05 before well development.
71.9	5		Grayish-white fine SAND, some clay and silt. Medium plasticity. Saturated, firm.	SM		40	0	
66.9	10		Grayish-yellow fine SAND,some clay and silt. Medium plasticity. Saturated, firm.	SM		60	0	
61.9	15		Brownish-orange fine SAND, some clay and silt. Medium plasticity. Saturated, firm.	SM		100	0	
	16		End of Borehole					

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 80.00'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +2.51' - 3.0' bgs
Inner Casing Elevation (amsl): 79.39'
Screen / Slot Size: PVC 10 slot
SC-Interval: 2.0' - 12.0' bgs
Ground Elevation (amsl): 76.88'
Casing Grout Type: Concrete
GT-Interval: +0.5' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 0.5' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 0.5' - 1.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 1.0' - 13.0' bgs

WELL DEVELOPMENT:

Date: 6/23/05
Initial Depth to Water: 0.85' bgs
Pumping Rate: 1.5 gpm
Method: Overpumping
Final Water Turbidity: 33 NTU
Purged Volume: 45 gal

WESTON SOLUTIONS
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Log of Borehole: BSMW0004

Project: Gibbsboro - Burn Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070257
Date Started: 6/22/05
Easting: 361867.237
Geologist/Logger: Gil Mello
Date Completed: 6/22/05
Northing: 364737.244

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
78.9	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
76.9	2		Dark brown fine SAND, little silt. Peat (2'-2.7'). Wet, loose.	SP-SM				
76.2						40	0	
75.9	3		Dark gray GRAVEL and coarse SAND. Saturated, loose.	SP				
	4		weak gray fine SAND, trace silt. Saturated, dense.					3.89 ft bgs - Static groundwater on 6/28/05 before well development.
	5							
	6			SP-SW				
	7					50	0	
68.9	10		Dark grayish-yellow fine SAND, little silt. Saturated, dense.					
	11							
	12			SP-SW		50	0	
63.9	15		End of Borehole					

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 78.90'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +3.54' - 3.0' bgs
Inner Casing Elevation (amsl): 82.22'
Screen / Slot Size: PVC 10 slot
SC-Interval: 3.0' - 13.0' bgs
Ground Elevation (amsl): 78.90'
Casing Grout Type: Concrete
GT-Interval: +0.8' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 1' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 1.0' - 2.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 2.0' - 14.0' bgs

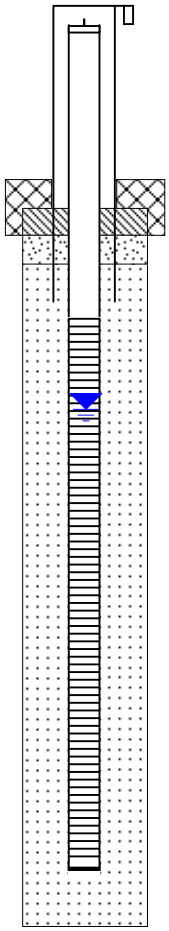
WELL DEVELOPMENT:

Date: 6/28/05
Initial Depth to Water: 3.89' bgs
Pumping Rate: 1.2 gpm
Method: Overpumping
Final Water Turbidity: 34 NTU
Purged Volume: 50 gal

WESTON SOLUTIONS
Restoring Resource Efficiency
205 Campus Drive
Edison, NJ 08837
Phone: (732) 417-5800
Fax: (732) 417-5801

Log of Borehole: BSMW0005

Project: Gibbsboro - Burn Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070339
Date Started: 7/20/05
Easting: 361793.295
Geologist/Logger: Gil Mello
Date Completed: 7/20/05
Northing: 364546.742

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
80.4	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
79.1	1		***Top Soil*** Light brown medium to fine SAND, some silt. Dry, loose.	SM				
78.9			Light brown fine SAND, some silt. Moist, loose.					
78.4	2		Greenish-gray coarse to fine SAND. Soil discoloration, glass, ashes, brick fragments. Mois, loose.	SW		80	0	
	3							
75.4	4		Light greenish-brown medium SAND, trace silt, trace gravel. Wet, firm.					3.63 ft bgs - Static groundwater on 7/27/05 before well development.
	5		Light greenish-brown medium SAND, trace silt, some gravel. Saturated, firm.	SP				
72.9	6							
72.4	7		Black CLAY and SILT. Medium plasticity, moist, soft.	OL/OH		100	0	
	8		Light brown fine SAND, some silt. Wet, firm.	SM				
70.9	9							
70.4	10		Light brown fine SAND, some silt and clay. Low plasticity, soft, wet.	OL/OH				
	11		Grayish-white fine SAND, little silt and clay. Low plasticity, saturated, firm.					
	12							
	13			SP-SM		100	0	
	14							
65.4	15		End of Borehole					
	16							

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 84.03'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +3.32' - 2.0' bgs
Inner Casing Elevation (amsl): 83.67'
Screen / Slot Size: PVC 10 slot
SC-Interval: 2.0' - 12.0' bgs
Ground Elevation (amsl): 80.35'
Casing Grout Type: Concrete
GT-Interval: +0.5' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 0.5' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 0.5' - 1.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 2.0' - 13.0' bgs

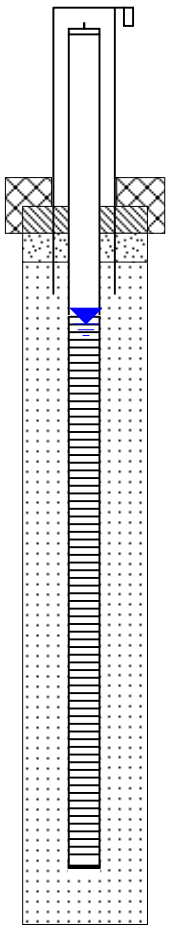
WELL DEVELOPMENT:

Date: 7/27/05
Initial Depth to Water: 3.63' bgs
Pumping Rate: 1.0 gpm
Method: Overpumping
Final Water Turbidity: 6.9 NTU
Purged Volume: 68 gal

WESTON SOLUTIONS
Restoring Resource Efficiency
205 Campus Drive
Edison, NJ 08837
Phone: (732) 417-5800
Fax: (732) 417-5801

Log of Borehole: BSMW0006

Project: Gibbsboro - Burn Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070340
Date Started: 7/20/05
Easting: 361857.811
Geologist/Logger: Gil Mello
Date Completed: 7/20/05
Northing: 364188.266

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
83.1	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
82.6			***Top Soil*** Dark brown medium SAND, little silt and clay. Moist, loose.	OL/OH SW				
81.6	1		Light grayish-white GRAVEL and coarse to fine SAND. Wet, dense.					
	2					80	0	2.12 ft bgs - Static groundwater on 7/26/05 before well development.
	3		Moderate brown fine SAND, some silt. Wet, firm.	SM				
78.1	4							
	5		Light greenish-brown GRAVEL and coarse to fine SAND. Wet, loose.	GW				
75.6	6							
	7					100	0	
	8		Yellowish-brown medium to fine SAND, some silt and clay. Low plasticity, saturated, firm.	SM				
73.1	9							
	10		Yellowish-white medium to fine SAND, little silt. Saturated, dense.					
	11							
	12			SM		100	0	
	13							
	14							
68.1	15		End of Borehole					
	16							

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 86.72'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +3.10' - 2.0' bgs
Inner Casing Elevation (amsl): 86.22'
Screen / Slot Size: PVC 10 slot
SC-Interval: 2.0' - 12.0' bgs
Ground Elevation (amsl): 83.12'
Casing Grout Type: Concrete
GT-Interval: +0.5' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 0.5' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 0.5' - 1.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 1.0' - 13.0' bgs

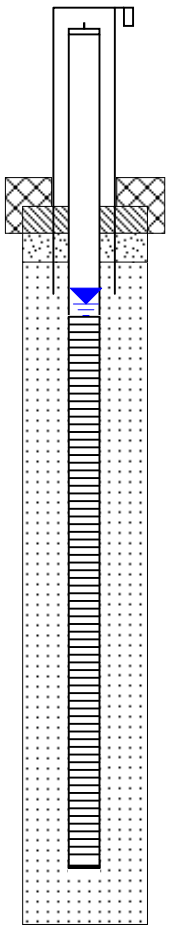
WELL DEVELOPMENT:

Date: 7/26/05
Initial Depth to Water: 2.12' bgs
Pumping Rate: 1.6 gpm
Method: Overpumping
Final Water Turbidity: 14 NTU
Purged Volume: 75 gal

WESTON SOLUTIONS
Restoring Resource Efficiency
205 Campus Drive
Edison, NJ 08837
Phone: (732) 417-5800
Fax: (732) 417-5801

Log of Borehole: BSMW0007

Project: Gibbsboro - Burn Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070341
Date Started: 7/21/05
Easting: 362385.408
Geologist/Logger: Gil Mello
Date Completed: 7/21/05
Northing: 364280.917

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
81.0	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
	0		***Top Soil*** Dark brown medium SAND. Organics. Moist loose.	OL/OH				
	1		Light yellowish-brown fine SAND, little silt. Wet, firm.					
	2					50	0	1.76 ft bgs - Static groundwater on 7/26/05 before well development.
	3			SP-SM				
75.0	4							
74.5	5		Dark brown CLAY and SILT. Organics. Medium plasticity, saturated, soft.	OL/OH				
74.0	6		Grayish-brown coarse to medium SAND, trace silt, some gravel. Saturated, firm.	SW		60	0	
	7							
	8							
	9		Yellowish-brown medium to fine SAND, little clay and silt. Medium plasticity, saturated, soft.					
	10							
	11			SP-SM				
	12					100	0	
	13							
	14							
66.0	15		End of Borehole					
	16							

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 84.66'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +3.60' - 2.0' bgs
Inner Casing Elevation (amsl): 84.08'
Screen / Slot Size: PVC 10 slot
SC-Interval: 2.0' - 12.0' bgs
Ground Elevation (amsl): 80.97'
Casing Grout Type: Concrete
GT-Interval: +0.5' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 0.5' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 0.5' - 1.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 1.0' - 13.0' bgs

WELL DEVELOPMENT:

Date: 7/26/05
Initial Depth to Water: 1.76' bgs
Pumping Rate: 1.6 gpm
Method: Overpumping
Final Water Turbidity: 14 NTU
Purged Volume: 58 gal

CRAIG TEST BORING COMPANY, INC.

BURN SITE RC 10/12/10

565 East Harding Highway • Post Office Box J • Mays Landing, New Jersey 08330 • 609-625-1700

CLIENT Sherwin - Williams Company
PROJECT Installation of Monitoring Wells
Gibbsboro, New Jersey
Boring No. MW-10 Sheet No. 1 of 1

DATE June 6, 1981
LAB. NO. 0208 31.13.577
Ground Surface Elev. 31-18083

Ground Water Data			
Depth	Hour	Date	Hrs. After Completion
3'	6/4/81		Comp. of Hole

A – Method of Advancing Boring	Depth
6" Drilled in Casing	0 to 15'
	to
	to

Depth	A	Sample No.	Sample Depth	N	Soil Classification	Remarks
			0-4'		f/m Sand, Sm. Silt/Tan	4'
5						
10						
15			4-15'		f/Sand, Sm. Silt/Light Gray	15'
					Auger boring completed at 15 feet.	
20						
25						
30						
35						
40						

S – 2" O. D. Split Spoon Sample
U – Undisturbed Sample, 3" Diameter
-- Core Drilling
N – Standard Penetration Resistance per 6" (140# hammer, 30" drop)
N.R – No Recovery

Driller Tom Ward

CL 150

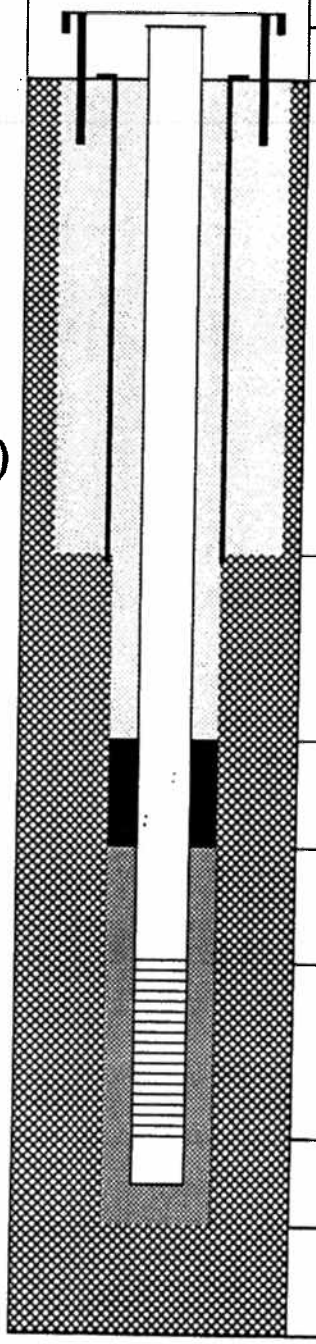
Well Completion Summary

Roy F. WESTON, Inc.

CLIENT	SHERWIN WILLIAMS PHASE 5	DRILLING FIRM	JCA
SITE NAME	SHERWIN WILLIAMS GIBBSBOR	INSPECTOR	JESS ANDERSON

WELL ID	MW-40
START DATE	11/08/99
COMPLETION DATE	11/09/99

WATER LEVELS



DEPTH		ELEV.
-80.60	TC	0.00
0.00	GS	80.60
53.00	OC	27.60
0.00	BN	80.60
58.00	SP	22.60
60.00	SC	20.60
70.00	BS	10.60
70.00	TD	80.60

DRILLING SUMMARY

Driller: STEVE BERGER
Drilling Fluid: MUD
Well Type: DOUBLE CASED SCREENED

WELL DESIGN CONSTRUCTION

Casing #1 Diameter: 4.00 inch Interval: 0.00 to 60.00 ft.
Type : PVC SCH 40
Casing #2 Diameter: 8.00 inch Interval: 0.00 to 53.00 ft.
Type : LOW CARBON

Stick Up Inner Casing: -80.60 ft. Protective Casing: 0.00 ft.

Casing Grout: CEMT/BENT Interval: 0.00 to 58.00 ft.

Seal Type: Interval: 0.00 to 0.00 ft.

Sand Pack Type: MORIE 0 Interval: 58.00 to 70.00 ft.
Grain Size: UNIFORM Median Diameter:
Screen Diameter: 4.00 Interval: 60.00 to 70.00 ft.
Type : PVC Slots: 0.010 inches

Silt Trap Interval: 0.00 to 0.00 ft.
Backfill Type: Interval: 0.00 to 0.00 ft.
Top of Bedrock:

WELL DEVELOPMENT

Date: / /
Method:
Yield: Purged Volume:

COMMENTS

TC = Top of Casing SP = Top Sand Pack = Grout
GS = Ground Surface SC = Top Screen = Seal
BN = Top Seal BS = Bottom Screen = Sand Pack
OC = Outer Casing TD = Total Depth = Formation

Additional Comments:

NOTE: Well Diagram not to Scale

Elevations are feet above mean sea level

04/25/00

CRAIG TEST BORING COMPANY, INC.

*RENAMED MW-7 (BURN SITE)

565 East Harding Highway • Post Office Box J • Mays Landing, New Jersey 08330 • 609-625-1700

CLIENT Sherwin - Williams Company
PROJECT Installation of Monitoring Wells
Gibbsboro, New Jersey

DATE June 6, 1981
LAB. NO. 0208 31.13.577 pc 10/22/81

Boring No. MW-12 * Sheet No. 1 of 1

Ground Surface Elev. 31-18085

Ground Water Data			
Depth	Hour	Date	Hrs. After Completion
3'	6/4/81		Comp. of Hole

A – Method of Advancing Boring	Depth
6" Drilled in Casing	0 to 15'
	to
	to

Depth	A	Sample No.	Sample Depth	N	Soil Classification	Remarks
5			0-5'		Misc. Fill	5'
10						
15			5-15'		f/Sand, Sm. Silt/Dark Brown	15'
20					Auger boring completed at 15 feet.	
25						
30						
35						
40						

S – 2" O. D. Split Spoon Sample
U – Undisturbed Sample, 3" Diameter
— Core Drilling
N – Standard Penetration Resistance per 6" (140# hammer, 30" drop)
N.R – No Recovery

Driller Tom Ward

FCL 150

CRAIG TEST BORING COMPANY, INC.

*RENAME MW-8 (BURN SITE)

565 East Harding Highway • Post Office Box J • Mays Landing, New Jersey 08330 • 609-625-1700

CLIENT Sherwin - Williams Company
PROJECT Installation of Monitoring Wells
Gibbsboro, New Jersey

DATE June 6, 1981
LAB. NO. 0208 31.13.577 PU 10/12/81

Boring No. MW-13* Sheet No. 1 of 1

Ground Surface Elev. 31-18086

Ground Water Data			
Depth	Hour	Date	Hrs. After Completion
3'	6/4/81		Comp. of Hole

A – Method of Advancing Boring	Depth
6" Drilled in Casing	0 to 15'
	to
	to

Depth	A	Sample No.	Sample Depth	N	Soil Classification	Remarks
15			0-15'		f/Sand,Sm.Silt/Yellow	15'
					Auger boring completed at 15 feet.	

S – 2" O. D. Split Spoon Sample
U – Undisturbed Sample, 3" Diameter
—— Core Drilling
N – Standard Penetration Resistance per 6" (140# hammer, 30" drop)
N.R – No Recovery

Driller Tom Ward

CL-150

CRAIG TEST BORING COMPANY, INC.

*RENAMED MW-9 (BURNSITE)

565 East Harding Highway • Post Office Box J • Mays Landing, New Jersey 08330 • 609-625-1700

CLIENT Sherwin - Williams Company
PROJECT Installation of Monitoring Wells
Gibbsboro, New Jersey

DATE June 6, 1981
LAB. NO. 0208 31,13577 31-18084 RL 10/12/10

Boring No. MW-11* Sheet No. 1 of 1
Ground Surface Elev.

Ground Water Data			
Depth	Hour	Date	Hrs. After Completion
8'	6/5/81		Comp. of Hole

A – Method of Advancing Boring	Depth
6" Drilled in Casing	0 to 20'
	to
	to

Depth	A	Sample No.	Sample Depth	N	Soil Classification	Remarks
5			0-8'		Misc. Fill	8'
10						
15						
20			8-20'		f/Sand, Sm. Silt/Dark Gray	20'
25					Auger boring completed at 20 feet.	
30						
35						
40						

S – 2" O. D. Split Spoon Sample
U – Undisturbed Sample, 3" Diameter
— — Core Drilling
N – Standard Penetration Resistance per 6" (140# hammer, 30" drop)
N.R – No Recovery

Driller Tom Ward

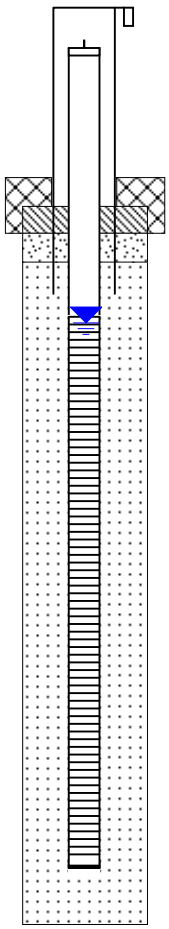
CL-150

WELREC 122 3480

WESTON SOLUTIONS
Restoring Resource Efficiency
205 Campus Drive
Edison, NJ 08837
Phone: (732) 417-5800
Fax: (732) 417-5801

Log of Borehole: RRMW0001

Project: Gibbsboro - Rail Road Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070258
Date Started: 6/21/05
Easting: 361647.639
Geologist/Logger: Gil Mello
Date Completed: 6/21/05
Northing: 364553.318

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
76.8	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
75.3	1		Weak brown fine SAND, little silt. Dry, loose.	SP-SM				
71.8	5		Light yellowish-brown coarse to fine SAND, little silt and clay, trace gravel. Low plasticity, wet, firm.	SP-SM		60	0	2.10 ft bgs - Static groundwater on 7/18/05 before well development.
71.3	5.5		Dark black CLAY and SILT. Peat. Medium plasticity, saturated, loose.	OL				
66.8	10		Pale grayish-white coarse to fine SAND, little silt, trace gravel. Saturated, loose.	SW-SM		60	0	
61.8	15		Light yellowish-brown fine SAND, some silt. Low plasticity, saturated, firm.	SM		100	0	
	15		End of Borehole					

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 80.44'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +2.88' - 2.0' bgs
Inner Casing Elevation (amsl): 79.71'
Screen / Slot Size: PVC 10 slot
SC-Interval: 2.0' - 12.0' bgs
Ground Elevation (amsl): 76.83'
Casing Grout Type: Concrete
GT-Interval: +0.5' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 0.5' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 0.5' - 1.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 1.0' - 13.0' bgs

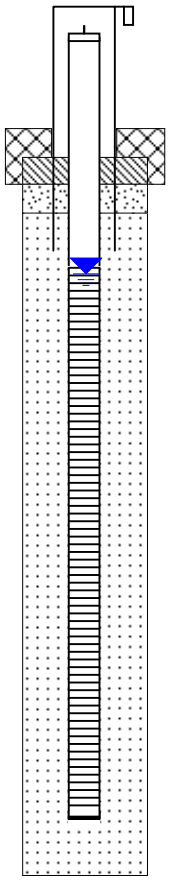
WELL DEVELOPMENT:

Date: 7/18/05 and 7/29/05
Initial Depth to Water: 2.10' bgs
Pumping Rate: 1.5 gpm
Method: Overpumping
Final Water Turbidity: 26 NTU
Purged Volume: 150 gal

WESTON SOLUTIONS
Restoring Resource Efficiency
205 Campus Drive
Edison, NJ 08837
Phone: (732) 417-5800
Fax: (732) 417-5801

Log of Borehole: RRMW0002

Project: Gibbsboro - Rail Road Site
Client: Sherwin-Williams
Driller: ECDI - Steve Moylan
Drilling Method: Hollow Stem Auger
NAD 1983 Coordinates
Well Permit #: 3100070259
Date Started: 6/22/05
Easting: 361658.426
Geologist/Logger: Gil Mello
Date Completed: 6/22/05
Northing: 364633.960

SUBSURFACE PROFILE						SAMPLE		
Elevation (ft amsl)	Depth (ft bgs)	Soil Profile	Description	USCS-ASTM	Well Construction	% Recovery	Soil Column PID (ppm)	Comments
77.4	0		Ground Surface					NOTES: Soil samples obtained with GEOPROBE 5' acetate sleeves for soil logging and PID screening prior to installation of monitoring well using Hollow Stem Auger.
76.9	0		Moderate brown medium to fine SAND, some silt, trace gravel. Moist, loose.	SM				
	1		Light yellowish-orange fine SAND, little silt, some gravel. Saturated, firm.	SP-SM		60	0	2.10 ft bgs - Static groundwater on 6/29/05 before well development.
72.4	5		Dark brown SILT, some clay. Peat. Medium plasticity, moist, soft.	SP-SM				
71.9	6		Pale grayish-white fine SAND, trace silt. Saturated, loose.	SP-SM		60	0	
67.4	10		Moderate brownish-orange fine SAND, some clay and silt. Medium plasticity, saturated, firm.	SM		80	0	
62.4	15		End of Borehole					

WELL DESIGN CONSTRUCTION:

Outer Casing Diameter / Type: 6" Steel Protective Stickup
Outer Casing Elevation (amsl): 80.11'
Inner Casing Diameter / Type: 2" PVC
IC-Interval: +2.16' - 2.0' bgs
Inner Casing Elevation (amsl): 79.54'
Screen / Slot Size: PVC 10 slot
SC-Interval: 2.0' - 12.0' bgs
Ground Elevation (amsl): 77.38'
Casing Grout Type: Concrete
GT-Interval: +0.5' - 0.5' bgs
Elevation Datum: NAVD 1988
Seal Type: Bentonite
ST-Interval: 0' - 0.5' bgs
Sand Pack Type 1: Morie # 00
SP1-Interval: 0.5' - 1.0' bgs
Sand Pack Type 2: Morie # 1
SP2-Interval: 1.0' - 13.0' bgs

WELL DEVELOPMENT:

Date: 6/29/05
Initial Depth to Water: 2.10' bgs
Pumping Rate: 0.6 gpm
Method: Overpumping
Final Water Turbidity: 33 NTU
Purged Volume: 55 gal

MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 2 5 4
Owner's Well Number (As shown on the application or plans):	BSMW0001
Well Completion Date:	6-16-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	14.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	6.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	3.44
Yield (gallons per minutes):	1.00
Length of Time well Pumped or Bailed:	0 Hours 45 Minutes
Lithologic Log:	Attach

AUTHENTICATION

I certify under penalty of law that, where applicable, I meet the requirements as specified on the reverse of this page, that I have personally examined and am familiar with the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 2 5 5
Owner's Well Number (As shown on the application or plans):	BSMW0002
Well Completion Date:	6-20-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	13.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	6.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	4.20
Yield (gallons per minutes):	1.00
Length of Time well Pumped or Bailed:	1 Hours 00 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____
Name (Type or Print)

_____
Signature

_____
Title

_____
Date

\\Eng4\drilling admin\Forms\Form A\31-70255.wpd

MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 2 5 6
Owner's Well Number (As shown on the application or plans):	BSMW0003
Well Completion Date:	6-20-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	12.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	5.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	0.85
Yield (gallons per minutes):	1.50
Length of Time well Pumped or Bailed:	0 Hours 30 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 2 5 7
Owner's Well Number (As shown on the application or plans):	BSMW0004
Well Completion Date:	6-22-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	13.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	6.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	3.89
Yield (gallons per minutes):	1.20
Length of Time well Pumped or Bailed:	0 Hours 45 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative

Name (Type or Print)

Signature

Title

Date

\\Eng4\drilling admin\Forms\Form A\31-70257.wpd

MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 3 3 9
Owner's Well Number (As shown on the application or plans):	BSMW0005
Well Completion Date:	7-20-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	13.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	6.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	3.63
Yield (gallons per minutes):	1.00
Length of Time well Pumped or Bailed:	1 Hours 00 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

\\Eng4\drilling admin\Forms\Form A\31-70339.wpd

MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 3 4 0
Owner's Well Number (As shown on the application or plans):	BSMW0006
Well Completion Date:	7-20-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	13.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	6.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	2.12
Yield (gallons per minutes):	2.00
Length of Time well Pumped or Bailed:	1 Hours 15 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative

Name (Type or Print)

Signature

Title

Date

\\Eng4\drilling admin\Forms\Form A\31-70340.wpd

MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 3 4 1
Owner's Well Number (As shown on the application or plans):	BSMW0007
Well Completion Date:	7-21-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	13.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	6.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	1.76
Yield (gallons per minutes):	2.00
Length of Time well Pumped or Bailed:	1 Hours 15 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____
Name (Type or Print)

_____
Signature

_____
Title

_____
Date

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MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 2 5 8
Owner's Well Number (As shown on the application or plans):	BWMW0001 (RRMW0001)
Well Completion Date:	6-21-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	12.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	5.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	2.13
Yield (gallons per minutes):	1.50
Length of Time well Pumped or Bailed:	0 Hours 30 Minutes
Lithologic Log:	Attach

AUTHENTICATION

I certify under penalty of law that, where applicable, I meet the requirements as specified on the reverse of this page, that I have personally examined and am familiar with the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

\\Eng4\drilling admin\Forms\Form A\31-70258.wpd

MONITORING WELL CERTIFICATION-FORM A- AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: Sherwin Williams Company, Inc.
Name of Facility: Paintworks Corporate Center
Location: 20 East Clementon Road, Gibbsboro, Camden County, New Jersey
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Well Drilling Permits Section, (609-984-6831)) :	3 1 0 0 0 7 0 2 5 9
Owner's Well Number (As shown on the application or plans):	BWMW0002 (RRMW0002)
Well Completion Date:	6-21-05
Distance from Top of Casing (cap off) to ground surface (one-hundredth of a foot):	+3.00
Total Depth of Well (one-hundredth of a foot):	12.00
Depth to Top of Screen From Top of Casing (one-hundredth of a foot):	5.00
Screen Length (feet):	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40.PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (one-hundredth of a foot):	2.10
Yield (gallons per minutes):	.50
Length of Time well Pumped or Bailed:	2 Hours 00 Minutes
Lithologic Log:	Attach

AUTHENTICATION

I certify under penalty of law that, where applicable, I meet the requirements as specified on the reverse of this page, that I have personally examined and am familiar with the information submitted in this document and all attachments, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

_____
Certification by Executive Officer or Duly Authorized Representative

_____ _____
Name (Type or Print) Signature

_____ _____
Title Date

\\Eng4\drilling admin\Forms\Form A\31-70254.wpd

*RENAMED MW-7 (BURN SITE) 10/12/06

31-18085

o DWR-138

FOR MONITORING PURPOSES

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

PERMIT NO. 31-18085

31 13577

APPLICATION NO. _____

COUNTY _____

WELL RECORD

1. OWNER SHerwin-Williams CO ADDRESS PO Box 6027 Cleveland OHIO
   Owner's Well No. 12* SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION SEE ATTACHED Location PLAN
3. DATE COMPLETED JUNE 3 1981 DRILLER F. G. CRAIG
4. DIAMETER: Top 12" inches Bottom 12" inches TOTAL DEPTH 15' Feet
5. CASING: Type PVC Diameter 4" Inches Length 7' Feet
6. SCREEN: Type PVC Size of Opening .020 Diameter 4" Inches Length 10' Feet
   Range in Depth { Top 5' Feet / Bottom 15' Feet } Geologic Formation _____
   Tail Piece: Diameter — Inches Length — Feet
7. WELL FLOWS NATURALLY N/A Gallons per minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date N/A Yield _____ Gallons per minute
   Static water level before pumping _____ Feet below surface
   Pumping level _____ feet below surface after _____ hours pumping
   Drawdown _____ Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How pumped _____ How measured _____
   Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
   Type N/A Mfrs. Name _____
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches
10. USED FOR N/A AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }
11. QUALITY OF WATER N/A Sample: Yes ____ No ____
    Taste _____ Odor _____ Color _____ Temp. _____ °F.
12. LOG SEE Attached Sheet Are samples available? NO
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)
13. SOURCE OF DATA _____
14. DATA OBTAINED BY F. Gordon Craig Date 9/16/81

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

*RENAMED MW-8 (BURN SITE) 10/12/06

31-18086

Form DWR-138
1/80

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

PERMIT NO. ~~31-18086~~

APPLICATION NO. _____

FOR MONITORING PURPOSES ONLY

WELL RECORD 31-B577

COUNTY _____

1. OWNER Sherwin-Williams Co ADDRESS PO Box 6027 Cleveland Ohio
   Owner's Well No. 13* SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION SEE ATTACHED LOCATION PLAN
3. DATE COMPLETED June 3 1981 DRILLER F. G. Craig
4. DIAMETER: Top 12" inches Bottom 12" inches TOTAL DEPTH 15 Feet
5. CASING: Type PVC Diameter 4" Inches Length 7 Feet
6. SCREEN: Type PVC Size of Opening .020 Diameter 4" Inches Length 10' Feet
   Range in Depth { Top 5' Feet; Bottom 15' Feet } Geologic Formation _____
   Tail Piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY N/A Gallons per minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date N/A Yield _____ Gallons per minute
   Static water level before pumping _____ Feet below surface
   Pumping level _____ feet below surface after _____ hours pumping
   Drawdown _____ Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How pumped _____ How measured _____
   Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
   Type N/A Mfrs. Name _____
   Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches
10. USED FOR N/A AMOUNT { Average _____ Gallons Daily; Maximum _____ Gallons Daily }
11. QUALITY OF WATER N/A Sample: Yes ____ No ____
    Taste _____ Odor _____ Color _____ Temp. _____ °F.
12. LOG SEE Attached Sheet Are samples available? NO
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)
13. SOURCE OF DATA _____
14. DATA OBTAINED BY F. Gordon Craig Date 9/16/81

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

* RENAMED MW-9 (BURN SITE) 10/12/06

31-18084

Form DWR-138
11/80

FOR MONITORING PURPOSES

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

31-13-577

WELL RECORD

PERMIT NO. 31-18084

APPLICATION NO. _____

COUNTY _____

1. OWNER SHERWIN-WILLIAMS CO ADDRESS P O BOX 6027 CLEVELAND OHIO

Owner's Well No. 11 * SURFACE ELEVATION _____ Feet (Above mean sea level)

2. LOCATION SEE ATTACHED LOCATION PLAN

3. DATE COMPLETED JUNE 3 1981 DRILLER F. G. CRAIG

4. DIAMETER: Top 12" inches Bottom 12" inches TOTAL DEPTH 20' Feet

5. CASING: Type PVC Diameter 4" Inches Length 12' Feet

6. SCREEN: Type PVC Size of Opening .020 Diameter 4" Inches Length 10' Feet

Range in Depth { Top 10' Feet / Bottom 20' Feet Geologic Formation _____

Tail Piece: Diameter — Inches Length — Feet

7. WELL FLOWS NATURALLY N/A Gallons per minute at _____ Feet above surface

Water rises to _____ Feet above surface

8. RECORD OF TEST: Date N/A Yield _____ Gallons per minute

Static water level before pumping _____ Feet below surface

Pumping level _____ feet below surface after _____ hours pumping

Drawdown _____ Feet Specific Capacity _____ Gals. per min. per ft. of drawdown

How pumped _____ How measured _____

Observed effect on nearby wells _____

9. PERMANENT PUMPING EQUIPMENT:

Type N/A Mfrs. Name _____

Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____

Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet

Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches

10. USED FOR N/A AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily

11. QUALITY OF WATER N/A Sample: Yes ____ No ____

Taste _____ Odor _____ Color _____ Temp. _____ °F.

12. LOG SEE Attached Sheet Are samples available? NO

(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)

13. SOURCE OF DATA _____

14. DATA OBTAINED BY F. Gordon Craig Date 9/16/81

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

MW-10 (BURN SITE) 2C 10/12/06

Form DWR-138
11/80

FOR MONITORING PURPOSES

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

31-18083

PERMIT NO. 31-18083

31 13 577

APPLICATION NO. _____

COUNTY _____

WELL RECORD

1. OWNER Sherwin-Williams Co ADDRESS P O Box 6027 Cleveland Ohio

Owner's Well No. 10 SURFACE ELEVATION _____ Feet (Above mean sea level)

2. LOCATION See Attached Location Plan

3. DATE COMPLETED June 3 1981 DRILLER F. G. Craig

4. DIAMETER: Top 12" inches Bottom 12" inches TOTAL DEPTH 15' Feet

5. CASING: Type PVC Diameter 4" Inches Length 7' Feet

6. SCREEN: Type PVC Size of Opening .020 Diameter 4" Inches Length 10' Feet

Range in Depth { Top 5' Feet / Bottom 15' Feet Geologic Formation _____

Tail Piece: Diameter _____ Inches Length _____ Feet

7. WELL FLOWS NATURALLY N/A Gallons per minute at _____ Feet above surface

Water rises to _____ Feet above surface

8. RECORD OF TEST: Date N/A Yield _____ Gallons per minute

Static water level before pumping _____ Feet below surface

Pumping level _____ feet below surface after _____ hours pumping

Drawdown _____ Feet Specific Capacity _____ Gals. per min. per ft. of drawdown

How pumped _____ How measured _____

Observed effect on nearby wells _____

9. PERMANENT PUMPING EQUIPMENT:

Type N/A Mfrs. Name _____

Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____

Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet

Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches

10. USED FOR N/A AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily

11. QUALITY OF WATER N/A Sample: Yes ____ No ____

Taste _____ Odor _____ Color _____ Temp. _____ °F.

12. LOG See Attached Sheet Are samples available? NO

(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy.)

13. SOURCE OF DATA _____

14. DATA OBTAINED BY F. Gordon Craig Date 9/16/81

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

DWR-138 M
11/98

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 31 - 56377

Atlas Sheet Coordinates 31 : 13 577

OWNER IDENTIFICATION - Owner SHERWIN WILLIAMS COMPANY
Address 101 PROSPECT AVE N W
City CLEVELAND State OH Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. mw-40
County CAMDEN Municipality GIBBSBORO BORO Lot No. 1 Block No. 8.01
Address 20 EAST CLEMENTON RD

DATE WELL STARTED 11 / 8 / 99
DATE WELL COMPLETED 11 / 8 / 99

TYPE OF WELL (as per Well Permit Categories) MONITORING
Regulatory Program Requiring Well WATER/HAZ ENF Case I.D.#

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) Tele. #

WELL CONSTRUCTION

Total depth drilled 70 ft.
Well finished to 70 ft.

Borehole diameter:
Top 12 in.
Bottom 8 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 2.5 ft.

Was steel protective casing installed? ☒ Yes ☐ No

Static water level after drilling 21.70 ft.

Water level was measured using M-scope

Well was developed for 2.0 hours at 5 gpm

Method of development Pumping

Was permanent pumping equipment installed? ☐ Yes ☐ No

Pump capacity N/A gpm

Pump type: —

Drilling Fluid Bentonite Type of Rig Failing F-7

Health and Safety Plan submitted? ☒ Yes ☐ No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+2.5	60	4	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)	0	53	8	Carbon Steel	Sch 40
Open Hole or Screen (No. Used .010)	60	70	4	PVC	Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	58	70		#0	
Grout	0/0	58/53		Neat Cement Bentonite	2914 lbs. 153 lbs.

Grouting Method Tremie
Drilling Method Mud Rotary

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations.

0-12' - Topsoil
12'-16' - Medium brown light gray silty sand
16'-20' - Light gray to tan silty sand
20'-24' - Yellow orange silty sand
24'-44' - Light brown, orange, gray silty sand
44'-58' - Orange to light red brown silty clay
58'-60' - Dark gray green black silty clay
60-70' - Dark green to black silty fossiliferous sand

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company JAMES C. ANDERSON ASSOC. INC.
Well Driller (Print) Steve Burger
Driller's Signature Steve Burger
Registration No. JD1624 Date 12 / 1 / 99

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit Number 3100070254

Atlas Sheet Coordinates 3113578

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY INC

Address 101 PROSPECT AVE N W

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address **Owner's Well No.** BSMW0001

County Camden Municipality Gibbsboro Boro Lot No. 1/1 Block No. 20/23

Address 20 EAST CLEMENTON RD PAINTWORKS CORPORATE CENTER

WELL USE Monitoring

DATE WELL STARTED 10-16-05

DATE WELL COMPLETED 10-16-05

WELL CONSTRUCTION

Total Depth Drilled 14 ft.

Finished Well Depth 13 ft.

Borehole Diameter:

Top 8 in.

Bottom 8 in.

Well was finished: [X] above grade [ ] flush mounted

If finished above grade, casing height (stick up) above land surface 3 ft.

Steel protective casing installed? [X] Yes [ ] No

Static Water Level after drilling 3.44 ft.

Water Level was Measured Using M-Scope

Well was developed for .75 hours

at 1 gpm

Method of development pump

Pump Capacity gpm

Pump Type

Drilling Fluid None Type of Rig DT66

Health and Safety Plan Submitted? [ ] Yes [X] No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+3	3	2	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	3	13	2	PVC	Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5 / 1	1 / 14		#00 / #0	
Grout	0	.5		Neat Cement / Bentonite	94 lbs / 5 lbs

Grouting Method Gravity Placement

Drilling Method H.S.A

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-1' - Light gray M-Sand
1-5' - Light yellow M-F Sand
5-14' - Light yellow M-F Sand

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

OR

LATITUDE: ° ' " LONGITUDE: ° ' "

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Moylan

Driller's Signature Steve Moylan

Registration No. WD22215 Date 8/1/05

ORIGINAL: DEP ***COPIES: DRILLER*** ***OWNER*** ***HEALTH DEPARTMENT***

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit Number 3100070255

Atlas Sheet Coordinates 3113578

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY INC

Address 101 PROSPECT AVE N W

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address Owner's Well No. BSMW0002

County Camden Municipality Gibbsboro Boro Lot No. 1/1 Block No. 20/23

Address 20 EAST CLEMENTON RD PAINTWORKS CORPORATE CENTER

WELL USE Monitoring

DATE WELL STARTED 6-20-05

DATE WELL COMPLETED 6-20-05

WELL CONSTRUCTION

Total Depth Drilled 14 ft.

Finished Well Depth 13 ft.

Borehole Diameter:

Top 8 in.

Bottom 8 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 3 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling 4.2 ft.

Water Level was Measured Using M-Scope

Well was developed for 1 hours

at 1 gpm

Method of development pump

Pump Capacity gpm

Pump Type

Drilling Fluid none Type of Rig DT606

Health and Safety Plan Submitted? ☐ Yes ☒ No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+3	3	2	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	3	13	2	PVC	Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5	1	#00		
Grout	1	14	#0	Neat Cement	94 lbs
	0	1		Bentonite	5 lbs

Grouting Method Gravity Placement

Drilling Method H.S.A.

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-1' - Red fill; yellow/green waste fill
1-5' - Dk brn waste fill
5-6.5' - Dk brn M-sand w/ little silt clay
6.5-14' - yellow/brn F sand w/ some silt & clay

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

OR

LATITUDE: ° ' " LONGITUDE: ° ' "

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Moylan

Driller's Signature Steve Moylan

Registration No. JD22213 Date 8/11/05

ORIGINAL: DEP ***COPIES: DRILLER*** ***OWNER*** ***HEALTH DEPARTMENT***

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit Number 3100070256

Atlas Sheet Coordinates 3113578

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY INC

Address 101 PROSPECT AVE N W

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address **Owner's Well No.** BSMW0003

County Camden Municipality Gibbsboro Boro Lot No. 1/1 Block No. 20/23

Address 20 EAST CLEMENTON RD PAINTWORKS CORPORATE CENTER

WELL USE Monitoring

DATE WELL STARTED 6-20-05

DATE WELL COMPLETED 6-20-05

WELL CONSTRUCTION

Total Depth Drilled 13 ft.

Finished Well Depth 12 ft.

Borehole Diameter:
Top 8 in.
Bottom 8 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 3 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling .85 ft.

Water Level was Measured Using M-Scope

Well was developed for .5 hours at 1.5 gpm

Method of development pumping

Pump Capacity gpm

Pump Type

Drilling Fluid none Type of Rig DT 66

Health and Safety Plan Submitted? ☐ Yes ☒ No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+3	2	2	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	2	12	2	PVC	Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5	1		#00	
	1	13		#0	
Grout	0	.5		Neat Cement	94 lbs
				Bentonite	5 lbs

Grouting Method Gravity Placement

Drilling Method HSA

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-1' - Brn/blk C-M sand
1-5' - Gray/wht F sand w/some clay & silt
5-10' - Gray/yellow F sand w/some clay
10-14' - Brn/orange F-sand

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

OR

LATITUDE: __° __ ' __.__ " LONGITUDE: __° __ ' __.__ "

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Molan

Driller's Signature Steve Molan

Registration No. D22215 Date 8/1/05

ORIGINAL: DEP ***COPIES: DRILLER*** ***OWNER*** ***HEALTH DEPARTMENT***

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit Number
3100070257

Atlas Sheet Coordinates
3113578

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY INC

Address 101 PROSPECT AVE N W

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address Owner's Well No. BSMW0004

County Camden Municipality Gibbsboro Boro Lot No. 1/1 Block No. 20/23

Address 20 EAST CLEMENTON RD PAINTWORKS CORPORATE CENTER

WELL USE Monitoring

DATE WELL STARTED 6-22-05

DATE WELL COMPLETED 6-22-05

WELL CONSTRUCTION

Total Depth Drilled 14 ft.

Finished Well Depth 13 ft.

Borehole Diameter:

Top 8 in.

Bottom 8 in.

Well was finished: ☑ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 3 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling 3.59 ft.

Water Level was Measured Using M scope

Well was developed for .45 hours at 12 gpm

Method of development Pump

Pump Capacity gpm

Pump Type

Drilling Fluid None Type of Rig DT26

Health and Safety Plan Submitted? ☐ Yes ☒ No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+3	3	2	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	3	13	2	PVC	Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5	1		#00	
Grout		14		#0	
	0	.5		Neat Cement	94 lbs
				Bentonite	5 lbs

Grouting Method Gravity placement

Drilling Method H.S.A.

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-2.5' - DK brn Peat
2.5-3 DK gray gravel w/c-M sand
3-10' - Gray F-sand
10-14' - DK gray yellow F sand w/some peat

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

OR

LATITUDE: __ ° __ ' __.__ " LONGITUDE: __ ° __ ' __.__ "

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Molan

Driller's Signature Steve Molano

Registration No. JD22215 Date 8/1/05

ORIGINAL: DEP ***COPIES: DRILLER*** ***OWNER*** ***HEALTH DEPARTMENT***

New Jersey Department of Environmental Protection
Bureau of Water Allocation

Well Permit Number 3100070339

MONITORING WELL RECORD

Atlas Sheet Coordinates 3113575

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY, INC.

Address 101 PROSPECT AVENUE, N.W.

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address **Owner's Well No.** BSMW005

County Camden Municipality Gibbsboro Boro Lot No. 1 Block No. 23,25

Address 20 EAST CLEMENTON ROAD PAINTWORKS CORP. CENTER

WELL USE Monitoring

DATE WELL STARTED 7-20-05

DATE WELL COMPLETED 7-20-05

WELL CONSTRUCTION

Total Depth Drilled 14 ft.

Finished Well Depth 13 ft.

Borehole Diameter:

Top 8 in.

Bottom 8 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 3 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling 3.63 ft.

Water Level was Measured Using M-scope

Well was developed for 1 hours

at 1 gpm

Method of development pump

Pump Capacity gpm

Pump Type

Drilling Fluid None Type of Rig DT06

Health and Safety Plan Submitted? ☐ Yes ☒ No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+3	3	2	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	3	13	2	PVC	Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5 / 1	14	#8		
Grout	0	.5		Neat Cement	94 lbs
				Bentonite	5 lbs

Grouting Method Gravity Placement

Drilling Method H.S.A.

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-2' - Lt brn F-sand, some silt
Green gray F-sand
2-7.5 - Lt brn Dk brn M-sand w/some gravel & silt
7.5-8 - Dk brn silt + clay
8-10 - Lt brn F-M sand w/some silt
10-14 - Grey white F-sand w/little silt

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Mylar

Driller's Signature Steve Mylar

Registration No. WD22215 Date 8/2/05

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

OR

LATITUDE: __ ° __ ' __.__ " LONGITUDE: __ ° __ ' __.__ "

ORIGINAL: DEP ***COPIES: DRILLER*** ***OWNER*** ***HEALTH DEPARTMENT***

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit Number 3100070340

Atlas Sheet Coordinates 3113575

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY, INC.

Address 101 PROSPECT AVENUE, N.W.

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address Owner's Well No. BSMW0006

County Camden Municipality Gibbsboro Boro Lot No. 1 Block No. 23,25

Address 20 EAST CLEMENTON ROAD PAINTWORKS CORP. CENTER

WELL USE Monitoring

DATE WELL STARTED 7-20-05

DATE WELL COMPLETED 7-20-05

WELL CONSTRUCTION

Total Depth Drilled 14 ft.

Finished Well Depth 13 ft.

Borehole Diameter:
Top 8 in.
Bottom 8 in.

Well was finished: [X] above grade [ ] flush mounted

If finished above grade, casing height (stick up) above land surface 3 ft.

Steel protective casing installed? [X] Yes [ ] No

Static Water Level after drilling 2.12 ft.

Water Level was Measured Using M-Scope

Well was developed for 1.15 hours at 2 gpm

Method of development Pump

Pump Capacity gpm

Pump Type

Drilling Fluid Type of Rig

Health and Safety Plan Submitted? [ ] Yes [X] No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+3	3	2	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used)	3	13	2	PVC	Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5 / 1	14		#00 / #0	
Grout	0	.5		Neat Cement	94 lbs
				Bentonite	5 lbs

Grouting Method Gravity Placement

Drilling Method H.S.A.

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-1.5' - Dk brn M-sand, silt & clay, little S
1.5-5' - Lt gray/wht gravel w/C-F sand
5-7.5' - Lt gray/brn Gravel w/C-F sand
7.5-10' - Yellow/brn M-F sand
10-14' - Yellow wht M-sand w/little silt

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Moylan

Driller's Signature Steve Moylan

Registration No. JD22215 Date 8/1/05

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

OR

LATITUDE: __ ° __ ' __ . __ " LONGITUDE: __ ° __ ' __ . __ "

ORIGINAL: DEP ***COPIES: DRILLER*** ***OWNER*** ***HEALTH DEPARTMENT***

New Jersey Department of Environmental Protection
Bureau of Water Allocation

Well Permit Number 3100070341

MONITORING WELL RECORD

Atlas Sheet Coordinates 3113575

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY, INC.

Address 101 PROSPECT AVENUE, N.W.

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address **Owner's Well No.** BSMW007

County Camden Municipality Gibbsboro Boro Lot No. 1 Block No. 23,25

Address 20 EAST CLEMENTON ROAD PAINTWORKS CORP. CENTER

WELL USE Monitoring

DATE WELL STARTED 7-21-05

DATE WELL COMPLETED 7-21-05

WELL CONSTRUCTION

Total Depth Drilled 14 ft.

Finished Well Depth 13 ft.

Borehole Diameter:

Top 8 in.

Bottom 8 in.

Well was finished: ☐ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface +3 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling 1.76 ft.

Water Level was Measured Using M-Scope

Well was developed for 1.15 hours at 2 gpm

Method of development Purge

Pump Capacity gpm

Pump Type

Drilling Fluid None Type of Rig DT64

Health and Safety Plan Submitted? ☐ Yes ☒ No

Level of Protection used on site (circle one) None D (C) B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt. Rating (lbs/sch no.)
Single/Inner Casing	0	3	2	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	3	13	2	PVC	Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5	14		#00 #0	
Grout	0	.5		Neat Cement 94 lbs Bentonite 5 lbs	

Grouting Method Gravity Placement

Drilling Method H.S.A.

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-2' - Dk brn M-sand
2-6' - Lt yellow brn F-sand w/ silt
6-6.5' - Dk brn clay + silt
6.5-7' - Gray brn C-M sand w/ silt + gravel
7-14' - yellow/brn M-sand w/ tr silt

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Molan

Driller's Signature Steve Molan

Registration No. D22215 Date 8/2/05

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

OR

LATITUDE: ° ' " LONGITUDE: ° ' "

ORIGINAL: DEP ***COPIES: DRILLER*** ***OWNER*** ***HEALTH DEPARTMENT***

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit Number 3100070258

Atlas Sheet Coordinates 3113578

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY INC

Address 101 PROSPECT AVE N W

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address Owner's Well No. BWMW001-(RRMW0001)

County Camden Municipality Gibbsboro Boro Lot No. 1/1 Block No. 20/23

Address 20 EAST CLEMENTON RD PAINTWORKS CORPORATE CENTER

WELL USE Monitoring

DATE WELL STARTED 6-21-05

DATE WELL COMPLETED 6-21-05

WELL CONSTRUCTION

Total Depth Drilled 13 ft.

Finished Well Depth 12 ft.

Borehole Diameter:
Top 8 in.
Bottom 8 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 3 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling 2.13 ft.

Water Level was Measured Using H-scope

Well was developed for .5 hours at 1.5 gpm

Method of development Pump

Pump Capacity gpm

Pump Type

Drilling Fluid None Type of Rig D16

Health and Safety Plan Submitted? ☐ Yes ☒ No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+3	2	2	PVC	Sch40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	2	12	2	PVC	Sch40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5	1		#00	
Grout	1	13		#0	
	0	.5		Neat Cement	94 lbs
				Bentonite	5 lbs

Grouting Method Gravity Placement

Drilling Method HSA

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-1.5' - Brn F sand w/ silt
1.5-5' - Yellow/brn C-F sand
5-5.5' - Dk brn silt & clay
5.5-10' - Pale gray white C-F sand w/ little white silt & gravel
10-13' - Yellow/brn F sand w/ some silt & clay

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

OR

LATITUDE: ° ' " LONGITUDE: ° ' "

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Moran

Driller's Signature Steve Moran

Registration No. D22215 Date 8/1/05

ORIGINAL: DEP ***COPIES: DRILLER*** ***OWNER*** ***HEALTH DEPARTMENT***

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit Number 3100070259

Atlas Sheet Coordinates 3113578

OWNER IDENTIFICATION SHERWIN WILLIAMS COMPANY INC

Address 101 PROSPECT AVE N W

City CLEVELAND State Ohio Zip Code 44115

WELL LOCATION - If not the same as owner please give address Owner's Well No. BWMW0002-(RRMW0002)

County Camden Municipality Gibbsboro Boro Lot No. 1/1 Block No. 20/23

Address 20 EAST CLEMENTON RD PAINTWORKS CORPORATE CENTER

WELL USE Monitoring

DATE WELL STARTED 6-21-05

DATE WELL COMPLETED 6-21-05

WELL CONSTRUCTION

Total Depth Drilled 13 ft.

Finished Well Depth 12 ft.

Borehole Diameter:

Top 8 in.

Bottom 8 in.

Well was finished: ☒ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 3 ft.

Steel protective casing installed? ☒ Yes ☐ No

Static Water Level after drilling 2.1 ft.

Water Level was Measured Using M-Scope

Well was developed for 2 hours at .5 gpm

Method of development Purging

Pump Capacity gpm

Pump Type

Drilling Fluid None Type of Rig DT66

Health and Safety Plan Submitted? ☐ Yes ☒ No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+3	2	2	PVC	40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	2	12	2	PVC	40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	.5 / 1	1 / 13		#00 / #0	
Grout	0	.5		Neat Cement / Bentonite	9(1) lbs / 5 lbs

Grouting Method Gravity Placement

Drilling Method H.S.A.

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations

0-.5' Brn M-F sand w/ some silt + gravel

.5-5' Yellow/org F sand w/ silt + gravel

5-10' Gray wht F-sand

10-13' Brn/orange F-sand, some clay

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company EAST COAST DRILLING, INC.

Well Driller (Print) Steve Mogan

Driller's Signature Steve Mogan

Registration No. 7D22215 Date 8/11/05

AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)

NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING:_____ EASTING:_____

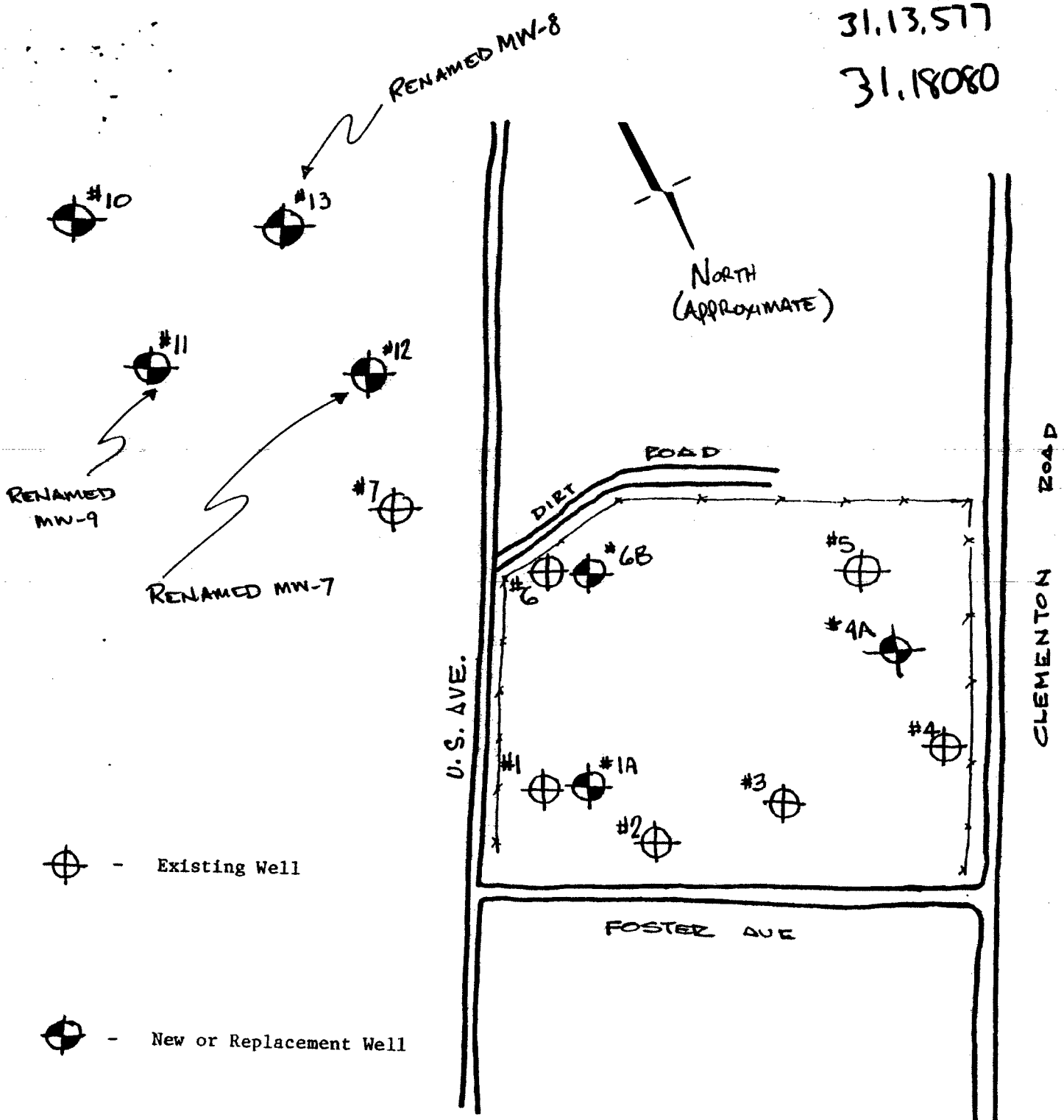
OR

LATITUDE: __° __' __.__" LONGITUDE: __° __' __.__"

ORIGINAL: DEP *COPIES: DRILLER* *OWNER* *HEALTH DEPARTMENT*

31,13,577

31,18080



Sherwin - Williams Company
Installation of Monitoring Wells
Gibbsboro, New Jersey
Test Boring Location Plot Plan
June 6, 1981
Lab. No.: 0208

NORTH ARROW ADDED 10/12/06

"RENAMED" WELL IDS ADDED 10/12/06

DWR-133M
11/01

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

3100070254 to

MONITORING WELL PERMIT

Permit No. 3100070259

Mail To:
NJDEP
BUREAU OF WATER ALLOCATION
PO BOX 426
TRENTON, NJ 08625-0426

VALID ONLY AFTER APPROVAL BY THE D.E.P.

COORD #: 31.13.578

Owner Sherwin Williams Company, Inc
Address 101 Prospect Ave. N.W.
Cleveland Ohio 44115-1075
Name of Facility Paintworks Corporate Center
Address 20 East Clementon Road
Gibbsboro, NJ 08026

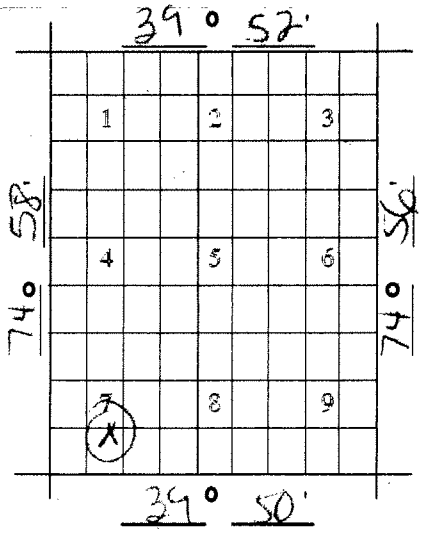
Driller East Coast Drilling
Address 1256 N. Church St
Moorestown, NJ 08057

Diameter of Well(s)	2 Inches	Proposed Depth of Well(s)	15' Feet
# of Wells Applied for (max. 10)	6	Will pumping equipment be utilized?	YES ☐ NO ☒
Type of Well (see reverse)	Monitoring	If Yes, give pump capacity	— cumulative GPM

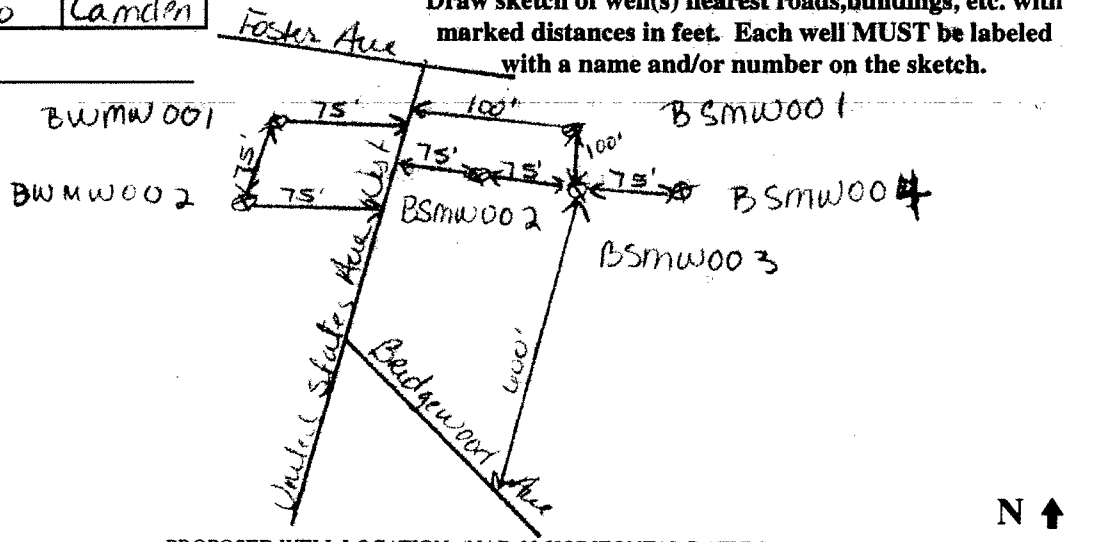
LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
1 1	20 23	Gibbsboro	Camden

State Atlas Map No. 31



Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.



PROPOSED WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____
OR
LATITUDE: __° __' __.__" LONGITUDE: __° __' __.__"

FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT. PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- ☐ RCRA Site
- ☐ Underground Storage Tank Site
- ☐ Operational Ground Water Permit Site
- ☐ Pretreatment and Residuals Site
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☐ Spill Site
- ☐ ISRA Site
- ☐ CERCLA (Superfund) Site
- ☒ Other (explain) Administrative Consent Order dated 9/26/90

CASE I.D. Number

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J. D.E.P.
JUN 10 2005
BUREAU OF WATER ALLOCATION

FOR D.E.P. USE ☐ Issuance of this permit is subject to the conditions attached. (see next page) ☐ For monitoring purposes only

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS PERTAINING TO THIS PERMIT.
In compliance with N.J.S.A.58:4A-14, application is made for a permit to drill a well as described above.

Date 6/1/05 Signature of Driller [signature] Registration No. 11004

Signature of Property Owner Mary Lou Corcoran

DWR-133M
11/01

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

3100070339
3100070340
3100070341

MONITORING WELL PERMIT

Permit No. 3100070341

VALID ONLY AFTER APPROVAL BY THE D.E.P.

Mail To:
NJDEP
BUREAU OF WATER ALLOCATION
PO BOX 426
TRENTON, NJ 08625-0426

COORD #: 31.135 75

Owner Sherwin Williams Company, The
Address 101 Prospect Ave, N.W.
Cleveland Ohio 44115-1075

Driller East Coast Drilling
Address 1256 N. Church St
Moorestown, NJ 08057

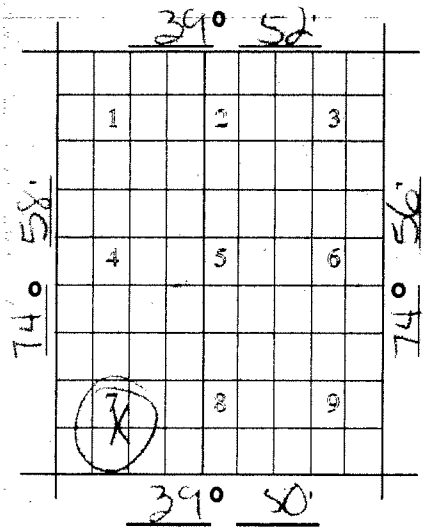
Name of Facility Paintworks Cup Center
Address 20 East Clementon Road
Gibbsboro NJ 08026

Diameter of Well(s)	2 Inches	Proposed Depth of Well(s)	15' Feet
# of Wells Applied for (max. 10)	3	Will pumping equipment be utilized?	YES ☐ NO ☒
Type of Well (see reverse)	Monitoring	If Yes, give pump capacity	——— cumulative GPM

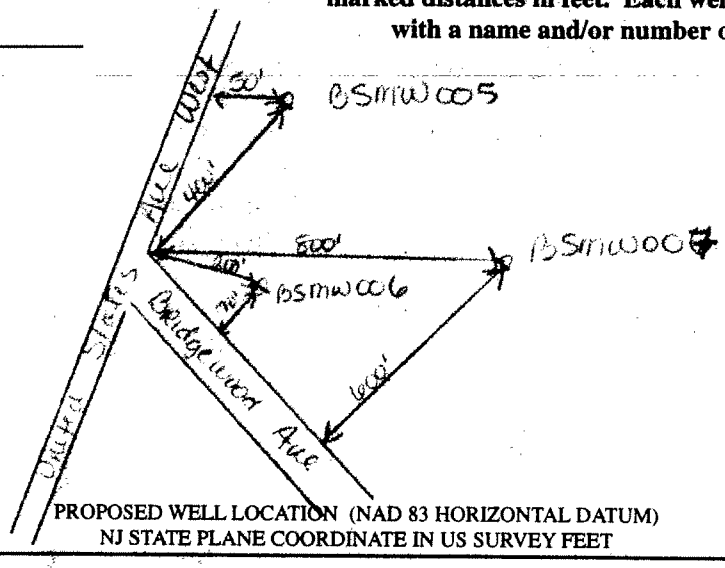
LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
1	23, 25	Gibbsboro	Camden

State Atlas Map No. 31



Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.



PROPOSED WELL LOCATION (NAD 83 HORIZONTAL DATUM)
NJ STATE PLANE COORDINATE IN US SURVEY FEET

NORTHING: _____ EASTING: _____

OR

LATITUDE: __ ° __ ' ____ " LONGITUDE: __ ° __ ' ____ "

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- ☐ RCRA Site
- ☐ Underground Storage Tank Site
- ☐ Operational Ground Water Permit Site
- ☐ Pretreatment and Residuals Site
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☒ Other (explain) Administrative Consent Order dated 9/26/90
- ☐ Spill Site
- ☐ ISRA Site
- ☐ CERCLA (Superfund) Site

CASE I.D. Number

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J. D.E.P.
JUN 27 2005
BUREAU OF WATER ALLOCATION

FOR D.E.P. USE ☐ Issuance of this permit is subject to the conditions attached. (see next page) ☒ For monitoring purposes only ☐ _____

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS PERTAINING TO THIS PERMIT.
In compliance with N.J.S.A.58:4A-14, application is made for a permit to drill a well as described above.

Date 6/23/05 Signature of Driller [signature] Registration No. 411-24

Signature of Property Owner [signature]

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: 3100070254
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): BSMW-0001

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 49.24" Latitude: North 39° 50' 02.89"

New Jersey State Plane Coordinates:
NAD 1983: North 364838.043 East 361918.891

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement NAVD 1988: 83.25	83.57	80.08
Reference NAVD 1929: 84.41	84.73	81.24

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

_____

Significant observations and notes: _____

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

William E. Alburger 5-23-06

PROFESSIONAL LAND SURVEYOR'S SIGNATURE DATE

William E. Alburger N.J.P.L.S. No. 32106
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

N:\WSIN\00030\CORRESPONDENCE\BSMW0001.DOC

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:
(This number must be permanently affixed to the well casing.) 3100070255

Owners Well Number (As shown on application or plans): BSMW-0002

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 48.69" Latitude: North 39° 50' 02.28"

New Jersey State Plane Coordinates:
NAD 1983: North 364775.280 East 361961.169

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement NAVD 1988: 82.05	82.60	79.34
Reference NAVD 1929: 83.21	83.76	80.50

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

Significant observations and notes: _____

AUTHENTICATION

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SEAL

William E. Alburger

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

5-23-00
DATE

William E. Alburger N.J.P.L.S. No. 32106
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

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MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: 3100070256
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): BSMW-0003

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 47.65" Latitude: North 39° 50' 02.61"

New Jersey State Plane Coordinates:
NAD 1983: North 364808.974 East 362042.780

	Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement NAVD 1988:	79.39	80.00	76.88
Reference NAVD 1929:	80.55	81.16	78.04

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

_____

Significant observations and notes: _____

AUTHENTICATION

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William E. Alburger
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

5-23-06
DATE

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PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

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MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:
(This number must be permanently affixed to the well casing.) 3100070257

Owners Well Number (As shown on application or plans): BSMW-0004

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 49.89" Latitude: North 39° 50' 01.89"

New Jersey State Plane Coordinates:
NAD 1983: North 364737.244 East 361867.237

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement NAVD 1988: 82.22	82.44	78.90
Reference NAVD 1929: 83.38	83.60	80.06

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

_____

Significant observations and notes: _____

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T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

N:\WSIN\00030\CORRESPONDENCE\BSMW0004.DOC

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number:
(This number must be permanently affixed to the well casing.) 3100070339

Owners Well Number (As shown on application or plans): BSMW-0005

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 50.83" Latitude: North 39° 50' 00.01"

New Jersey State Plane Coordinates:
NAD 1983: North 364546.742 East 361793.295

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement NAVD 1988: 83.67	84.03	80.35
Reference NAVD 1929: 84.83	85.19	81.51

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

_____

Significant observations and notes: _____

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T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

N:\WSIN\00030\CORRESPONDENCE\BSMW0005.DOC

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: 3100070340
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): BSMW-0006

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 56.47" Latitude: North 39° 49' 56.47"

New Jersey State Plane Coordinates:
NAD 1983: North 364188.266 East 361857.811

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement		
NAVD 1988: 86.22	86.72	83.12
Reference		
NAVD 1929: 87.38	87.88	84.28

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

_____

Significant observations and notes: _____

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William E. Alburger

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

5-23-06
DATE

William E. Alburger N.J.P.L.S. No. 32106
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

N:\WSIN\00030\CORRESPONDENCE\BSMW0006.DOC

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: 3100070341
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): BSMW-0007

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 43.22" Latitude: North 39° 49' 57.41"

New Jersey State Plane Coordinates:
NAD 1983: North 364280.917 East 362385.408

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement NAVD 1988: 84.08	84.66	80.97
Reference NAVD 1929: 85.24	85.82	82.13

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

_____

Significant observations and notes: _____

AUTHENTICATION

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5-23-06
DATE

William E. Alburger N.J.P.L.S. No. 32106
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

N:\WSIN\00030\CORRESPONDENCE\BSMW0007.DOC

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: 3100070258
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): RRMW-0001

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 52.69" Latitude: North 39° 50' 00.07"

New Jersey State Plane Coordinates:
NAD 1983: North 364553.318 East 361647.639

	Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement NAVD 1988:	79.71	80.44	76.83
Reference NAVD 1929:	80.87	81.60	77.99

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

_____

Significant observations and notes: _____

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SEAL

William E. Alburger
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

5-23-06
DATE

William E. Alburger N.J.P.L.S. No. 32106
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

N:\WSIN\00030\CORRESPONDENCE\RRMW0001.DOC

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: _____

Name of Facility: Sherwin Williams Site

Location: Gibbsboro, New Jersey

Case Number(s): _____ (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: 3100070259
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): RRMW-0002

Geographic Coordinate NAD 83 (to nearest 1/10 of second):
1983: Longitude: West 74° 57' 52.56" Latitude: North 39° 50' 00.86"

New Jersey State Plane Coordinates:
NAD 1983: North 364633.960 East 361658.426

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'):	Outer Casing:	Existing Grade:
Permit Requirement		
NAVD 1988: 79.54	80.11	77.38
Reference		
NAVD 1929: 80.70	81.27	78.54

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)

_____

Significant observations and notes: _____

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

SEAL

William E. Alburger

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

5-23-06
DATE

William E. Alburger N.J.P.L.S. No. 32106
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER

T&M Associates, 1256 North Church Street, Suite 3, Moorestown, NJ 08057
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

T&M Project # WSIN00030

N:\WSIN\00030\CORRESPONDENCE\RRMW0002.DOC

Bouwer-Rice (1976) Solution for a Slug Test in an Unconfined Aquifer

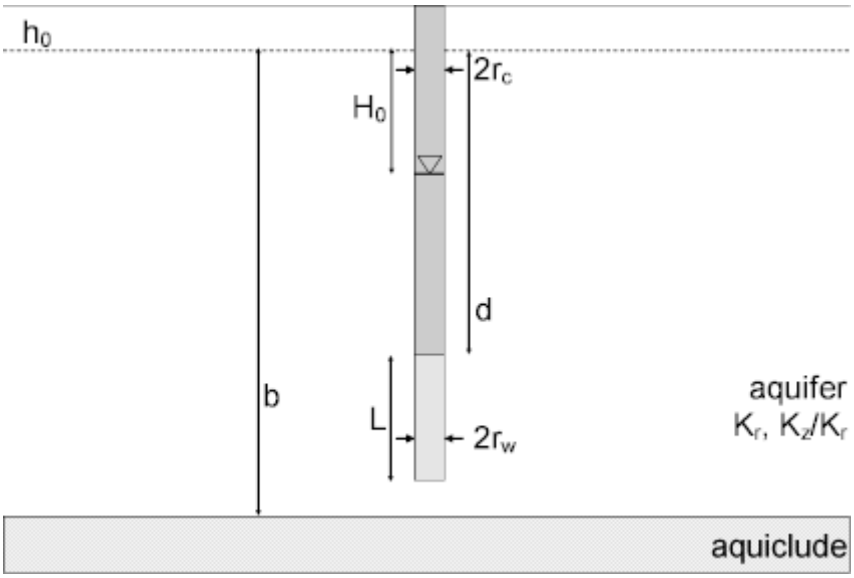
(Match > Solution)

Bouwer and Rice (1976) developed a semi-analytical method for the analysis of an overdamped slug test in a fully or partially penetrating well in an unconfined aquifer. The Bouwer-Rice method employs a quasi-steady-state model that ignores elastic storage in the aquifer.

In cases of noninstantaneous test initiation, apply the translation method of Pandit and Miner (1986) prior to analyzing the data.

If the test well is screened across the water table, you may apply an optional correction for the effective porosity of the filter pack. When the test well is fully submerged (i.e., screened below the water table) or the aquifer is confined, the correction is unnecessary.

- **Illustration**



- **Equations**

  Bouwer and Rice (1976) developed an empirical relationship describing the water-level response in an unconfined aquifer due to the instantaneous injection or withdrawal of water from a well:

$$\ln(H_0) - \ln(h) = \frac{2KLt}{r_{ce}^2 \ln(r_e / r_{we})}$$

$$r_{we} = r_w \sqrt{K_z / K_r}$$

  where

  - h is displacement at time t [L]
  - H_0 is initial displacement [L]

- K, K_r is radial hydraulic conductivity [L/T]
- K_z is vertical hydraulic conductivity [L/T]
- L is screen length [L]
- n_e is filter pack effective porosity [dimensionless]
- r_c is nominal casing radius [L]
- r_{ce} is effective casing radius (= r_c when well screen is fully submerged) [L]
- r_e is external radius [L]
- r_w is well radius [L]
- r_{we} is equivalent well radius [L]
- t is time [T]

The term $\ln(r_e/r_{we})$ is an empirical quantity that accounts for well geometry (Bouwer and Rice 1976).

Zlotnik (1994) proposed an equivalent well radius (r_{we}) for a partially penetrating well in an anisotropic aquifer. Enter the anisotropy ratio in the aquifer data for the slug test well; the well radius is unchanged when the anisotropy ratio is set to unity (1.0).

- **Assumptions**
  - aquifer has infinite areal extent
  - aquifer is homogeneous and of uniform thickness
  - test well is fully or partially penetrating
  - aquifer is unconfined
  - flow to well is quasi-steady-state (storage is negligible)
  - volume of water, V, is injected into or discharged from the well instantaneously
- **Data Requirements**
  - test well measurements (time and displacement)
  - initial displacement
  - casing radius and well radius
  - depth to top of well screen and screen length
  - saturated thickness

- porosity of gravel pack for well screened across water table (optional)
- hydraulic conductivity anisotropy ratio (for partially penetrating wells)

○ **Estimated Parameters**

- K (hydraulic conductivity)
- y0 (intercept of line on y axis)

○ **Curve Matching Tips**

- Follow guidelines developed by Butler (1998) for analyzing slug tests.
- Choose Match>Visual to perform visual curve matching using the procedure for straight-line solutions.
- For this solution, visual curve matching is often more effective than automatic matching because you are interested in matching the straight line to a specific range of data that meet the assumptions of the solution. To achieve the same effect with automatic curve matching, it would require the judicious application of weights to ignore observations outside the desired range.
- Choose View>Options and select the **Recommended Head Range** option in the **Plots** tab to superimpose on the plot the head range recommended by Butler (1998) to obtain the most reliable matching results for solutions (assuming a steady-state representation of flow for a slug test).

○ **References**

1. Bouwer, H., 1989. The Bouwer and Rice slug test--an update, Ground Water, vol. 27, no. 3, pp. 304-309.
2. Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.
3. Zlotnik, V., 1994. Interpretation of slug and packer tests in anisotropic aquifers, Ground Water, vol. 32, no. 5, pp. 761-766.

Dagan (1978) Solution for a Slug Test in an Unconfined Aquifer Pro

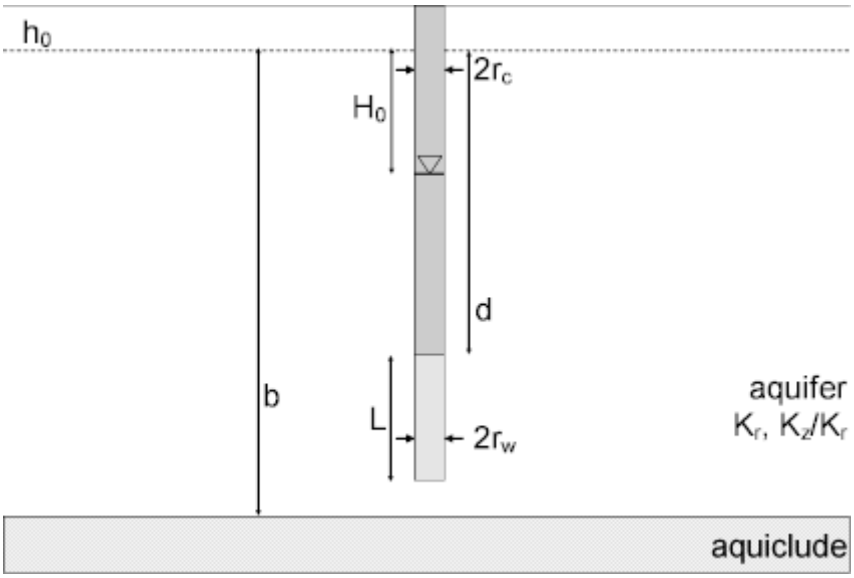
(Match > Solution)

Dagan (1978) developed a semi-analytical method for an overdamped slug test in a well screened across the water table in a homogeneous, anisotropic unconfined aquifer. Like the Bouwer-Rice and Hvorslev models, the Dagan method employs a quasi-steady-state model that ignores elastic storage in the aquifer.

In cases of noninstantaneous test initiation, apply the translation method of Pandit and Miner (1986) prior to analyzing the data.

For wells screened across the water table, you may apply an optional correction for the effective porosity of the filter pack.

- **Illustration**



- **Equations**

Dagan (1978) developed semi-analytical method to predict the water-level response due to the instantaneous injection or withdrawal of water from a well screened across the water table in an unconfined aquifer:

$$\ln\left(\frac{h}{H_0(2L-h/(2L-H_0)}\right)=-\frac{2K_rLt}{r_{ce}^2/P}$$

$$r_{ce}=\sqrt{r_c^2+n_e(r_w^2-r_c^2)}$$

where

- h is displacement at time t [L]
- H_0 is initial displacement [L]

- K, K_r is radial hydraulic conductivity [L/T]
- L is screen length [L]
- n_e is filter pack effective porosity [dimensionless]
- P is dimensionless flow parameter
- r_c is casing radius [L]
- r_{ce} is equivalent casing radius [L]
- r_w is well radius including filter pack [L]
- t is time [T]

The term P is a shape factor that depends on well geometry and hydraulic conductivity anisotropy. Values of P are available in Dagan (1978), Boast and Kirkham (1971) and Butler (1998). AQTESOLV uses a table look-up procedure to find appropriate values of P.

- **Assumptions**
  - aquifer has infinite areal extent
  - aquifer is homogeneous and of uniform thickness
  - test well is partially penetrating
  - aquifer is unconfined
  - flow to well is quasi-steady-state (storage is negligible)
  - volume of water, V, is injected into or discharged from the well instantaneously
- **Data Requirements**
  - test well measurements (time and displacement)
  - initial displacement
  - casing radius and well radius
  - depth to top of well screen and screen length
  - saturated thickness
  - porosity of gravel pack for well screened across water table (optional)
  - hydraulic conductivity anisotropy ratio
- **Estimated Parameters**
  - K (hydraulic conductivity)
  - y0 (intercept of line on y axis)

- **Curve Matching Tips**

  - Follow guidelines developed by Butler (1998) for analyzing slug tests.
  - Choose Match>Visual to perform visual curve matching using the procedure for straight-line solutions.
  - For this solution, visual curve matching is often more effective than automatic matching because you are interested in matching the straight line to a specific range of data that meet the assumptions of the solution. To achieve the same effect with automatic curve matching, it would require the judicious application of weights to ignore observations outside the desired range.
  - Choose View>Options and select the **Recommended Head Range** option in the **Plots** tab to superimpose on the plot the head range recommended by Butler (1998) to obtain the most reliable matching results for solutions (assuming a steady-state representation of flow for a slug test).

- **References**

1. Boast, C.W. and D. Kirkham, 1971. Auger hole seepage theory, Soil Science of America Proceedings, vol. 35, no. 3, pp. 365-373.
2. Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.
3. Butler, J.J., Jr., 1998. The Design, Performance, and Analysis of Slug Tests, Lewis Publishers, Boca Raton, 252p.
4. Dagan, G., 1978. A note on packer, slug, and recovery tests in unconfined aquifers, Water Resources Research, vol. 14, no. 5. pp. 929-934.

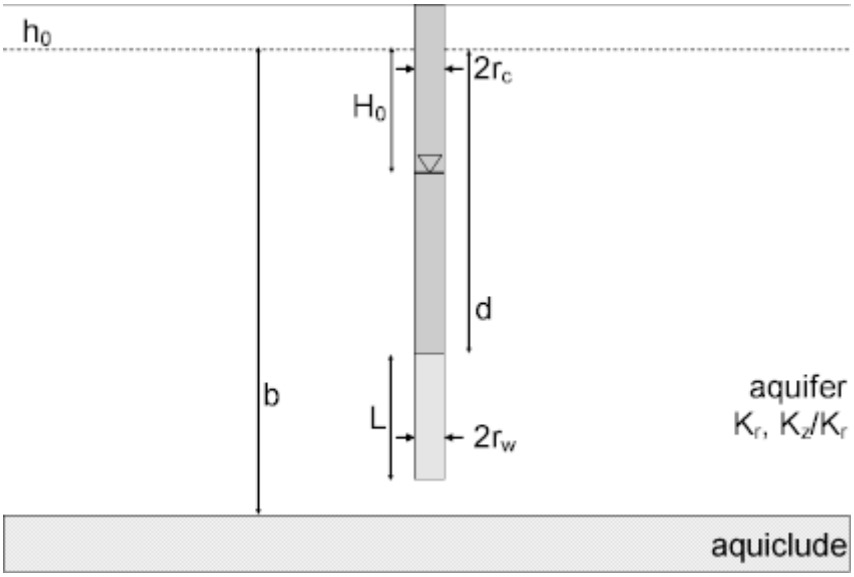
Hvorslev (1951) Solution for a Slug Test in an Unconfined Aquifer

(Match > Solution)

For slug tests in an unconfined aquifer, the preferred quasi-steady-state method is the Bouwer-Rice (1976) solution; however, Bouwer (1989) observed that the water-table boundary in an unconfined aquifer has little effect on slug test response unless the top of the well screen is positioned close to the boundary. Thus, in many cases, we may apply the Hvorslev (1951) solution for confined aquifers to approximate unconfined conditions when the well screen is below the water table.

In cases of noninstantaneous test initiation, apply the translation method of Pandit and Miner (1986) prior to analyzing the data.

- **Illustration**



- **Equations**

  Refer to the equations for the Hvorslev (1951) solution for a confined aquifer.

  For the unconfined variant of the Hvorslev solution, AQTESOLV applies the correction for filter pack porosity for wells screened across the water table. For the confined Hvorslev solution, the filter pack correction is unnecessary.

- **Assumptions**

  - aquifer has infinite areal extent
  - aquifer is homogeneous and of uniform thickness
  - test well is fully or partially penetrating
  - aquifer is confined
  - flow to well is quasi-steady-state (storage is negligible)

- volume of water, V, is injected into or discharged from the well instantaneously

- **Data Requirements**
  - test well measurements (time and displacement)
  - initial displacement
  - casing radius and well radius
  - depth to top of well screen and screen length
  - saturated thickness
  - hydraulic conductivity anisotropy ratio (for partially penetrating wells)
- **Estimated Parameters**
  - K (hydraulic conductivity)
  - y0 (intercept of line on y axis)
- **Curve Matching Tips**
  - Follow guidelines developed by Butler (1998) for analyzing slug tests.
  - Choose Match>Visual to perform visual curve matching using the procedure for straight-line solutions.
  - For this solution, visual curve matching is often more effective than automatic matching because you are interested in matching the straight line to a specific range of data that meet the assumptions of the solution. To achieve the same effect with automatic curve matching, it would require the judicious application of weights to ignore observations outside the desired range.
  - Choose View>Options and select the **Recommended Head Range** option in the **Plots** tab to superimpose on the plot the head range recommended by Butler (1998) to obtain the most reliable matching results for solutions (assuming a steady-state representation of flow for a slug test).
- **References**

1. Bouwer, H., 1989. The Bouwer and Rice slug test--an update, Ground Water, vol. 27, no. 3, pp. 304-309.
2. Hvorslev, M.J., 1951. Time Lag and Soil Permeability in Ground-Water Observations, Bull. No. 36, Waterways Exper. Sta. Corps of Engrs, U.S. Army, Vicksburg, Mississippi, pp. 1-50.

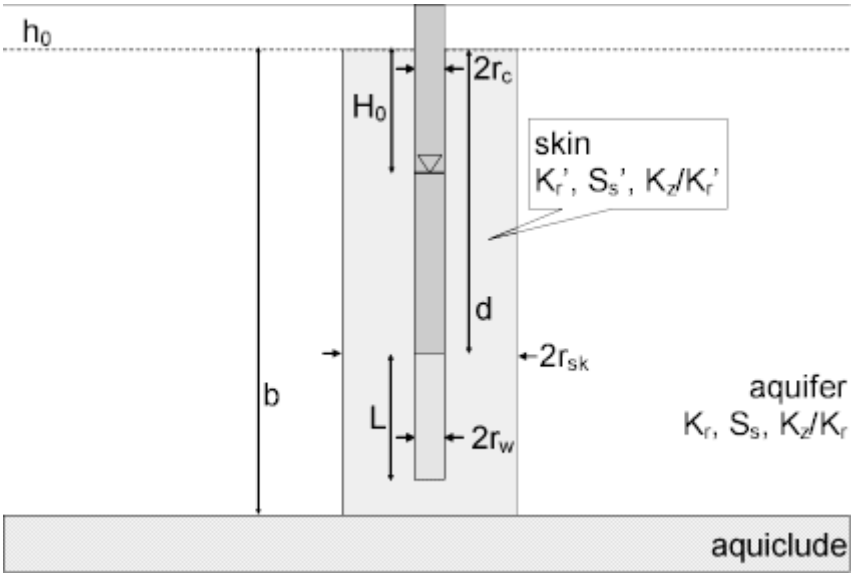
Hyder et al. (1994) Solution for a Slug Test in an Unconfined Aquifer (KGS Model) Pro

(Match > Solution)

Hyder et al. (1994) developed a fully transient model, also known as the **KGS Model**, for an overdamped slug test in an unconfined aquifer for fully and partially penetrating wells. The solution simulates water-level response at the test and observation wells and includes a skin zone of finite thickness enveloping the test well. The KGS Model allows you to analyze data from multiwell slug tests.

When you choose a solution, AQTESOLV provides two configurations for simulating a slug test with the KGS Model. One configuration omits the well skin and the other includes it.

- **Illustration**



- **Equations**

Hyder et al. (1994) derived an analytical solution, also known as the KGS Model, describing the water-level response due to the instantaneous injection or withdrawal of water from a fully or partially penetrating well in an unconfined aquifer. The equation for the Laplace transform solution for head in the test well is as follows:

$$\overline{h} = \frac{(\gamma/2)\Omega^*}{(1+(\gamma/2)p\Omega^*)}$$

$$\alpha = \frac{2r_2^2 S_{s2} L}{r_c^2}$$

$$\gamma = K_{r2}/K_{r1}$$

$$\Omega^* = \int_{\varsigma}^{\varsigma+1} (F_s^{-1}[F_s(\varpi^*)f_1])d\eta$$

$$f_1 = \frac{[\Delta_2 K_0(\upsilon_1) - \Delta_1 I_0(\upsilon_1)]}{\upsilon_1[\Delta_2 K_1(\upsilon_1) + \Delta_1 I_1(\upsilon_1)]}$$

$$\eta = z / L$$

$$\zeta = d / L$$

$$\upsilon_i = (\psi_i^2 \varpi^2 + R_i^2 p)^{1/2}$$

$$\psi_i = (A_i / a^2)^{1/2}$$

$$A_i = K_{zi} / K_{ri}$$

$$a = L / r_w$$

$$R_1 = \gamma\alpha / 2\lambda$$

$$R_2 = \alpha / 2$$

$$\lambda = S_{s2} / S_{s1}$$

$$\Delta_1 = K_0(\upsilon_1 \xi_{sk}) K_1(\upsilon_2 \xi_{sk}) - \frac{N}{\gamma} K_0(\upsilon_2 \xi_{sk}) K_1(\upsilon_1 \xi_{sk})$$

$$\Delta_2 = I_0(\upsilon_1 \xi_{sk}) K_1(\upsilon_2 \xi_{sk}) + \frac{N}{\gamma} K_0(\upsilon_2 \xi_{sk}) I_1(\upsilon_1 \xi_{sk})$$

$$N = \upsilon_1 / \upsilon_2$$

$$\xi = r_{sk} / r_w$$

$$F_s(\varpi^*) = \text{modified finite fourier sine transform of } B(z)$$

$$F_s^{-1} = \text{inverse modified finite fourier sine transform}$$

$$B(z) = \begin{cases} 0, & z < d,\ z > L + d \\ 1, & otherwise \end{cases}$$

where

- the subscript i = 1, 2 refers to the aquifer and well skin, respectively
- d is depth to top of well screen [L]
- I_i is modified Bessel function of first kind, order i
- K_r is radial hydraulic conductivity [L/T]
- K_z is vertical hydraulic conductivity [L/T]

- K_i is modified Bessel function of second kind, order i
- L is screen length [L]
- p is the Laplace transform variable
- r is radial distance [L]
- r_c is casing radius [L]
- r_{sk} is well skin radius [L]
- r_w is well radius [L]
- S_s is specific storage [1/L]
- z is depth below top of aquifer [L]

○ **Assumptions**

- aquifer has infinite areal extent
- aquifer is homogeneous and of uniform thickness
- aquifer potentiometric surface is initially horizontal
- test and observation wells are fully or partially penetrating
- aquifer is unconfined
- flow is unsteady
- water is released instantaneously from storage with decline of hydraulic head
- a volume of water, V, is injected into or discharged from the well instantaneously

○ **Data Requirements**

- test and observation well measurements (time and displacement)
- initial displacement
- casing radius, well radius and outer radius of well skin for test well
- saturated thickness
- well depth and screen length

○ **Estimated Parameters**

- Kr (radial hydraulic conductivity in aquifer)
- Ss (specific storage in aquifer)
- Kz/Kr (anisotropy ratio in aquifer)

- Kr' (radial hydraulic conductivity in skin)
- Ss' (specific storage in skin)
- Kz/Kr' (anisotropy ratio in skin)

Curve Matching Tips

- Follow guidelines developed by Butler (1998) for analyzing slug tests.
- Choose Match>Visual to perform visual curve matching using the procedure for type-curve solutions.
- Select values of Ss and Kz/Kr from the **Family** and **Curve** drop-down lists on the toolbar.
- Use parameter tweaking to perform visual curve matching and sensitivity analysis.

References

1. Hyder, Z, J.J. Butler, Jr., C.D. McElwee and W. Liu, 1994. Slug tests in partially penetrating wells, Water Resources Research, vol. 30, no. 11, pp. 2945-2957.

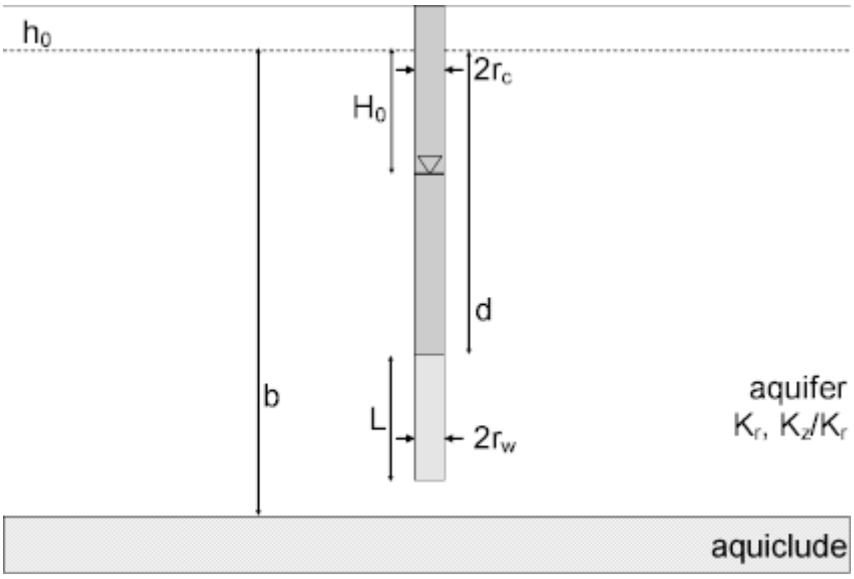
Springer-Gelhar (1991) Solution for a Slug Test in an Unconfined Aquifer Pro

(Match > Solution)

Springer and Gelhar (1991) extended the Bouwer-Rice (1976) solution for a slug test in a homogeneous, anisotropic unconfined aquifer to include inertial effects in the test well. The solution accounts for oscillatory water-level response sometimes observed in aquifers of high hydraulic conductivity. Based on the work of Butler (2002), we also incorporate frictional well loss in small-diameter wells.

The Springer-Gelhar solution predicts the theoretical change in water level in the test well; however, McElwee (2001) and Zurbuchen et al. (2002) have noted that transducer readings vary with depth and thus may not accurately measure the water-level position. Butler et al. (2003) recommend placing the transducer close to the static water surface in the well to avoid this problem.

- **Illustration**



- **Equations**

The Springer-Gelhar (1991) solution accounts for underdamped (oscillatory) water-level response sometimes observed in aquifers of high hydraulic conductivity:

$$w_D(t_D) = \begin{cases} e^{-C_D t_D}\left(\cos(\varpi_D t_D) + \dfrac{C_D}{\varpi_D}\sin(\varpi_D t_D)\right), & C_D < 1 \\ e^{-t_D}(1+t_D), & C_D = 1 \\ -\left(\dfrac{1}{\varpi_D^+ - \varpi_D^-}\right)\left(\varpi_D^- e^{\varpi_D^+ t_D} - \varpi_D^+ e^{\varpi_D^- t_D}\right), & C_D > 1 \end{cases}$$

$$w_D = s / H_0$$

$$t_D = t\sqrt{g / L_e}$$

$$C_D = \sqrt{g / L_e}\,\frac{r_c^2 \ln(r_e / r_w)}{4K_r L}$$

$$\omega_D = \sqrt{1 - C_D}$$

$$\omega_D^{\pm} = -C_D \pm \omega_D$$

$$\psi = \frac{\sqrt{K_z / K_r}}{L / r_w}$$

where

- g is gravitational acceleration [L/T^2]
- H_0 is initial displacement [L]
- K_r is radial hydraulic conductivity [L/T]
- K_z is vertical hydraulic conductivity [L/T]
- L is screen length [L]
- L_e is effective water column length [L]
- r_c is casing radius [L]
- r_w is well radius [L]
- s is displacement [L]
- t is time [T]

The term $\ln(r_e/r_w)$ is an empirical quantity that accounts for well geometry (Bouwer and Rice 1976).

In the foregoing equations, the dimensionless damping factor, C_D, is termed critically damped when its value equals 1. Certain publications (e.g., Butler 1998) use an alternate convention in which the equations are critically damped when C_D equals 2.

Butler (2002) modified the definition of C_D to include frictional well loss:

$$C_D = \sqrt{g / L_e}\left(\frac{r_c^2 \ln(r_e / r_w)}{4K_r L} + \frac{4\upsilon\left(\ell + \frac{r_c^2}{r_w^2}\frac{L}{2}\right)}{r_c^2 g}\right)$$

where

- ℓ is length of water column above top of well screen [L]
- υ is kinematic viscosity [L^2/T]

○ **Assumptions**

- aquifer has infinite areal extent
- aquifer is homogeneous and of uniform thickness
- test well is fully or partially penetrating
- aquifer is unconfined
- flow is quasi-steady state
- volume of water, V, is injected into or discharged from the well instantaneously

○ **Data Requirements**

- test well measurements (time and displacement)
- initial displacement
- static water column height
- casing radius and well radius
- depth to top of well screen and screen length
- saturated thickness
- hydraulic conductivity anisotropy ratio
- kinematic viscosity of water (optional)
- gravitational acceleration constant (optional)

○ **Estimated Parameters**

- K (hydraulic conductivity)
- Le (effective water column length in test well)

For reference, AQTESOLV also displays the parameter L (theoretical effective water column length) determined from well geometry data. One normally expects Le to be close to the value of L.

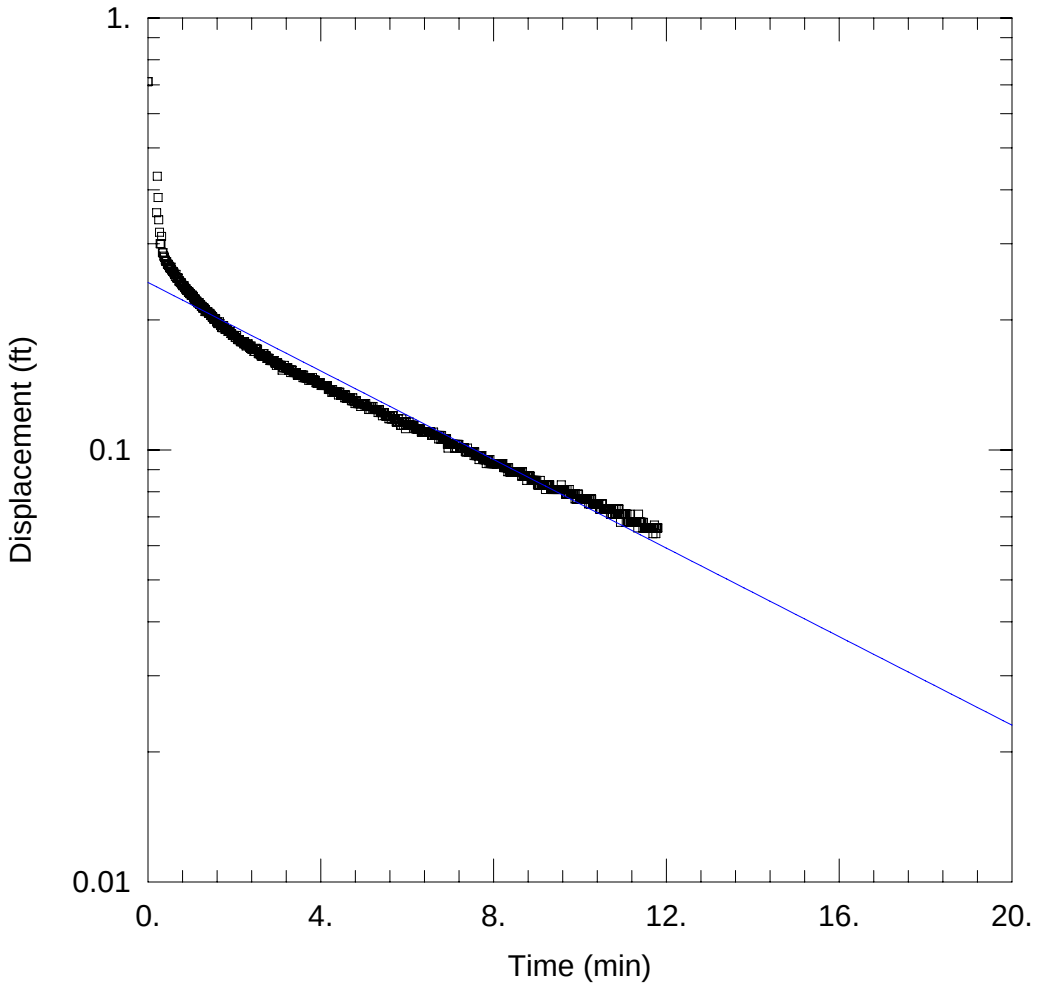
○ **Curve Matching Tips**

- Choose Match>Visual to perform visual curve matching using the procedure for type-curve solutions. Move the mouse up and down to adjust the amplitude of the curve. Move the mouse left and right to adjust the period.
- Select values of Le from the **Family** and **Curve** drop-down lists on the toolbar.
- Use parameter tweaking to perform visual curve matching and sensitivity analysis.

- When performing automatic curve matching, save time by setting weights to zero for any observations that have recovered to static near the end of the test.
- Choose View>Options to change the critically damped value of dimensionless damping factor, C(D) (i.e., 1 or 2).

References

1. Springer, R.K. and L.W. Gelhar, 1991. Characterization of large-scale aquifer heterogeneity in glacial outwash by analysis of slug tests with oscillatory response, Cape Cod, Massachusetts, U.S. Geol. Surv. Water Res. Invest. Rep. 91-4034, pp. 36-40.
2. Bouwer, H. and R.C. Rice, 1976. A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells, Water Resources Research, vol. 12, no. 3, pp. 423-428.
3. Butler, J.J., Jr., 1998. The Design, Performance, and Analysis of Slug Tests, Lewis Publishers, Boca Raton, 252p.
4. Butler, J.J., Jr., 2002. A simple correction for slug tests in small-diameter wells, Ground Water, vol. 40, no. 3, pp. 303-307.
5. Butler, J.J., Jr., Garnett, E.J. and J.M. Healey, 2003. Analysis of slug tests in formations of high hydraulic conductivity, Ground Water, vol. 41, no. 5, pp. 620-630.
6. McElwee, C.D., Butler, J.J., Jr. and G.C. Bohling, 1992. Nonlinear analysis of slug tests in highly permeable aquifers using a Hvorslev-type approach, Kansas Geol. Survey Open-File Report 92-39.
7. Zlotnik, V.A. and V.L. McGuire, 1998. Multi-level slug tests in highly permeable formations: 1. Modifications of the Springer-Gelhar (SG) model, Jour. of Hydrol., no. 204, pp. 271-282.
8. Zurbuchen, B. R., V.A. Zlotnik and J.J. Butler, Jr., 2002. Dynamic interpretation of slug tests in highly permeable aquifers, Water Resources Research, vol. 38, no. 3., 1025, doi:10.1029/2001WRR000354.



BSMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW1-in1BR.aqt
Date: 02/12/09 Time: 13:35:02

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft Anisotropy Ratio (Kz/Kr): 1.

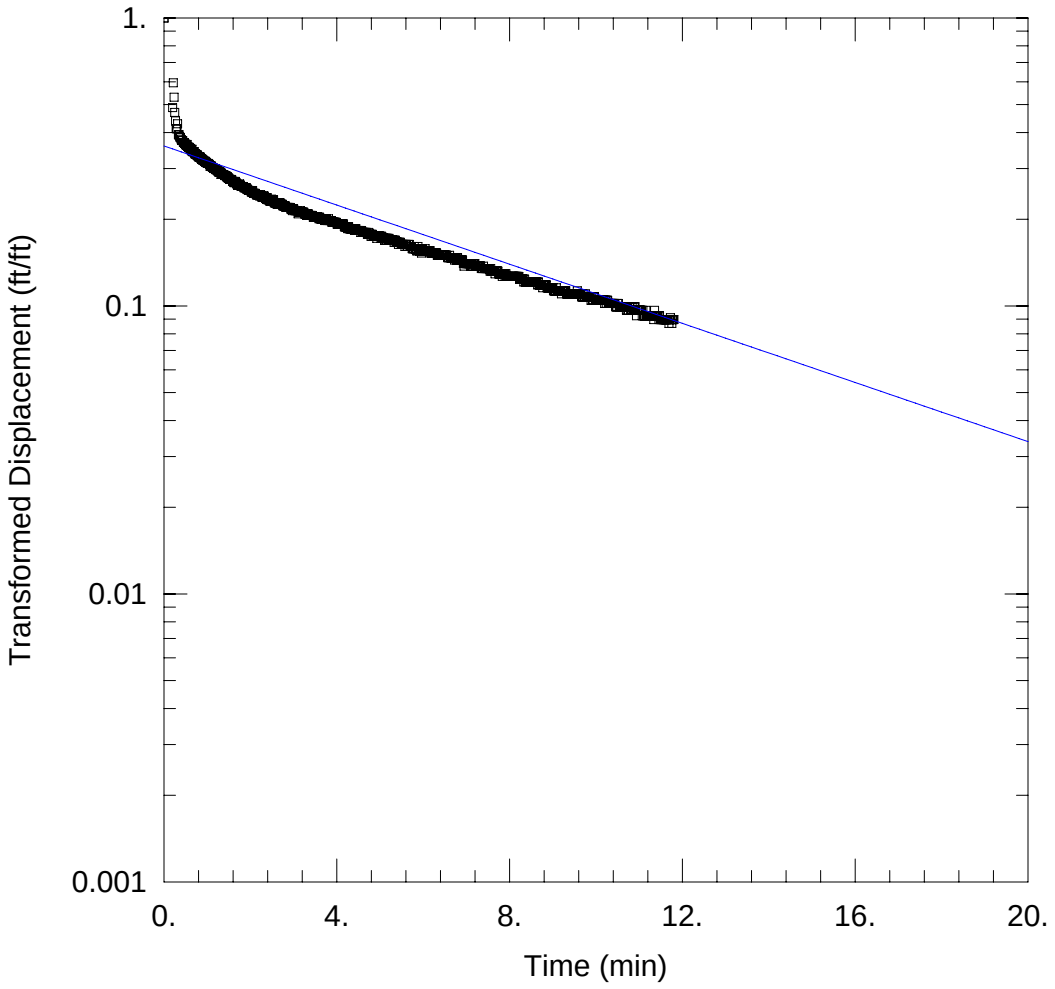
WELL DATA (BSMW0001)

Initial Displacement: 0.712 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.786 ft/day y0 = 0.2442 ft



BSMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW1-in1DGN.aqt
Date: 02/12/09 Time: 13:36:01

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

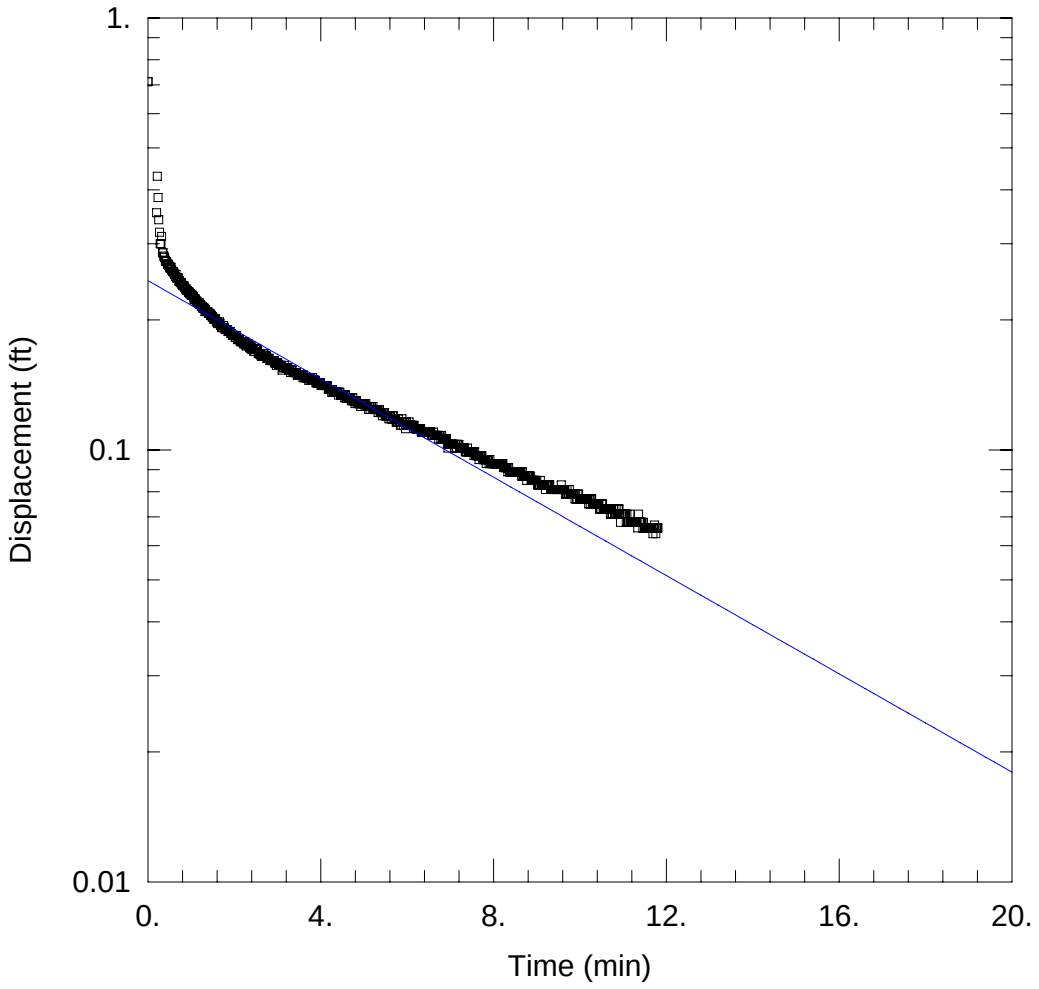
Saturated Thickness: 40.23 ft
Anisotropy Ratio (Kz/Kr): 0.0182

WELL DATA (BSMW0001)

Initial Displacement: 0.712 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Dagan
K = 0.9495 ft/day
y0 = 0.2618 ft



BSMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW1-in1HV.aqt
Date: 02/12/09 Time: 13:36:52

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft Anisotropy Ratio (Kz/Kr): 1.

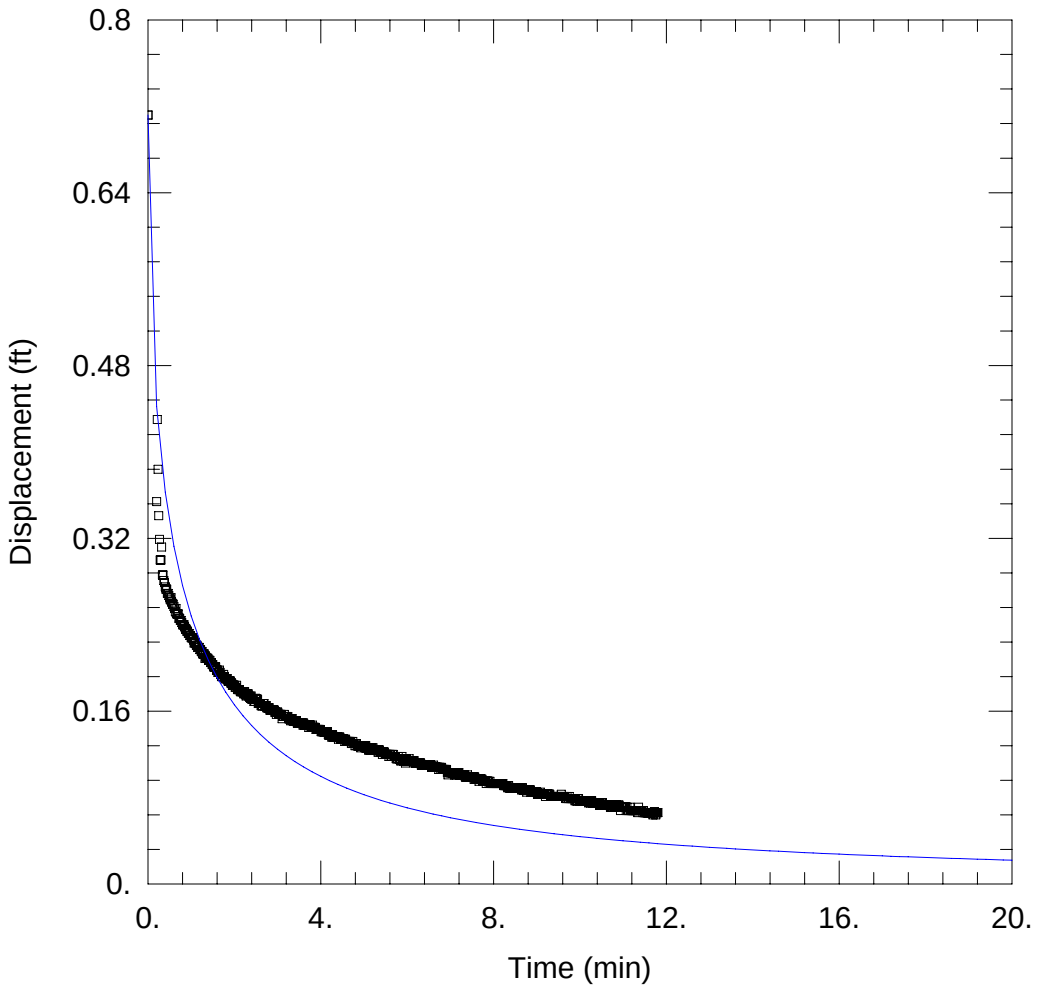
WELL DATA (BSMW0001)

Initial Displacement: 0.712 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.388 ft/day y0 = 0.2465 ft



BSMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW1-in1KGS.aqt
Date: 02/12/09 Time: 13:37:36

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft

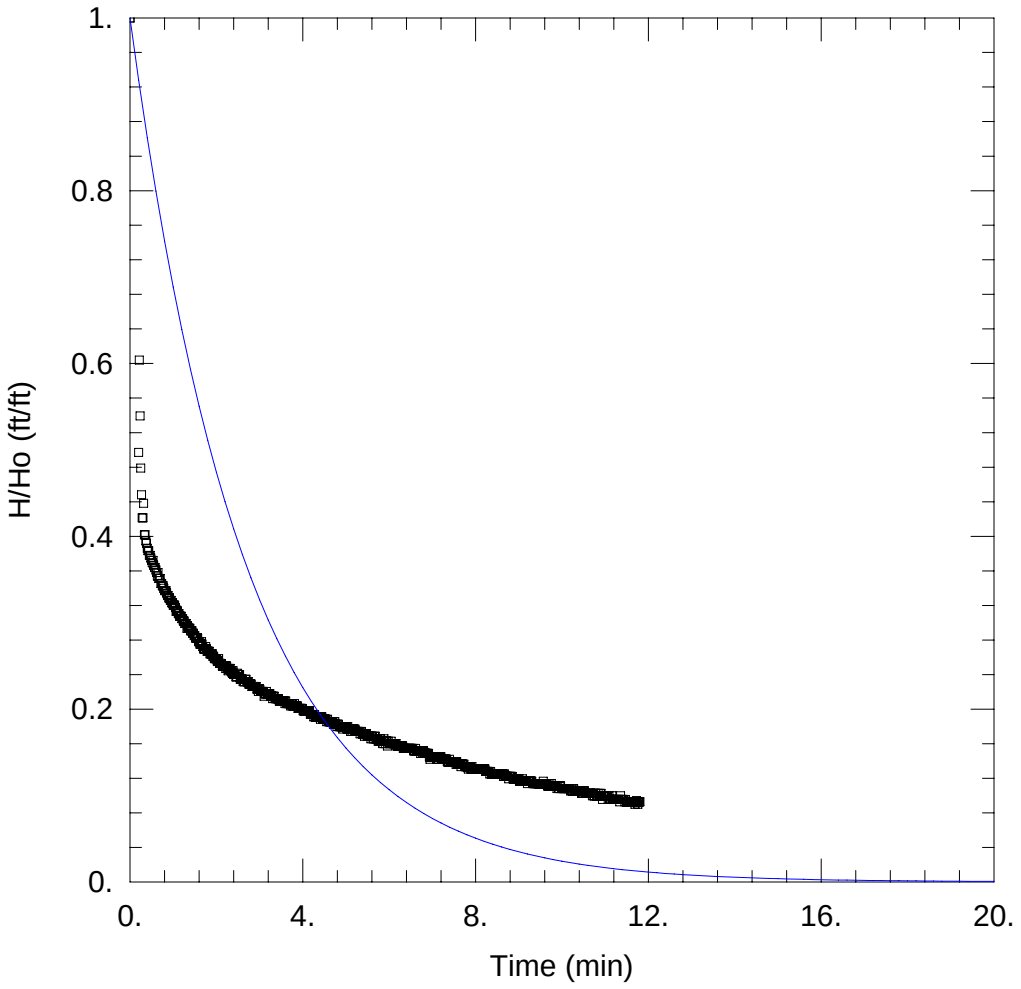
WELL DATA (BSMW0001)

Initial Displacement: 0.712 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.3744 ft/day
Kz/Kr = 0.0182
Ss = 0.002486 ft^{-1}



BSMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW1-in1SG.aqt
Date: 02/12/09 Time: 13:38:12

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

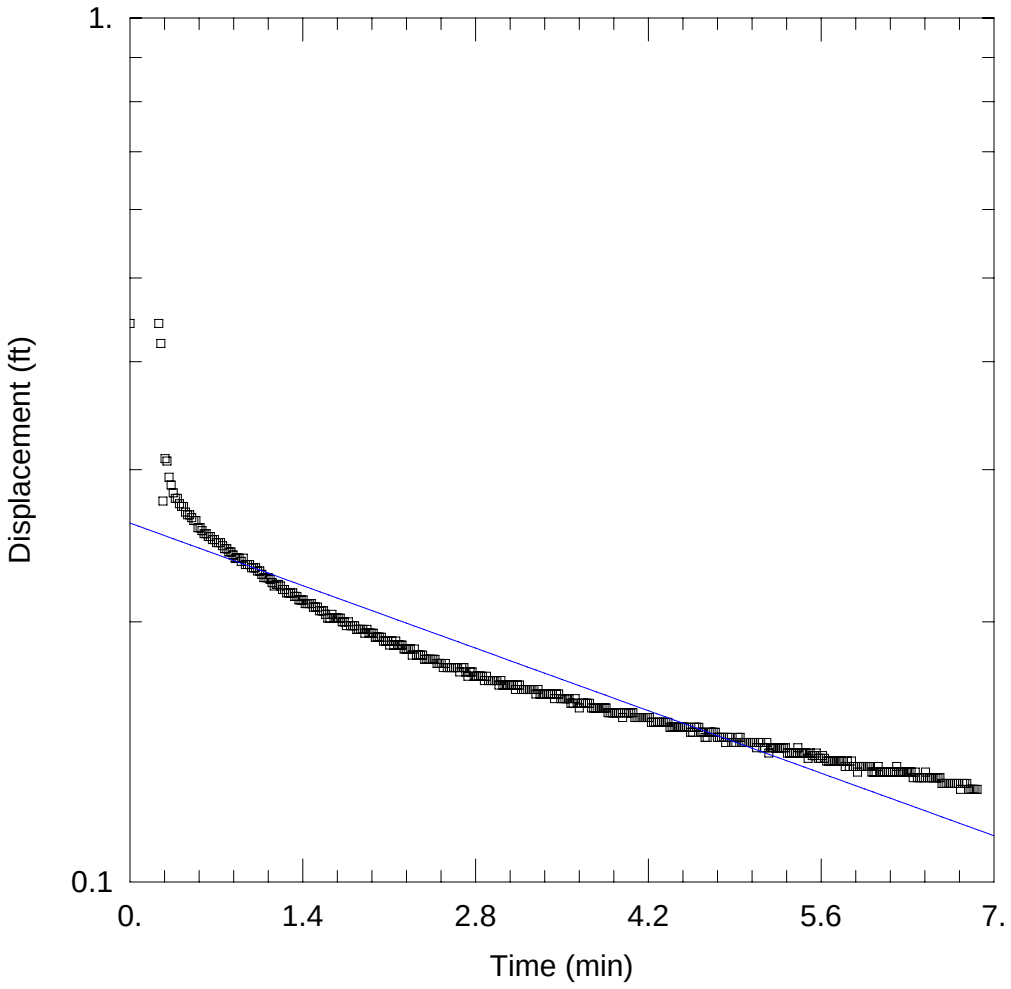
Saturated Thickness: 40.23 ft
Anisotropy Ratio (Kz/Kr): 0.0182

WELL DATA (BSMW0001)

Initial Displacement: 0.712 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 0.6324 ft/day
Le = 0.1 ft



BSMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW1-in2BR.aqt
Date: 02/12/09 Time: 13:40:19

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft Anisotropy Ratio (Kz/Kr): 1.

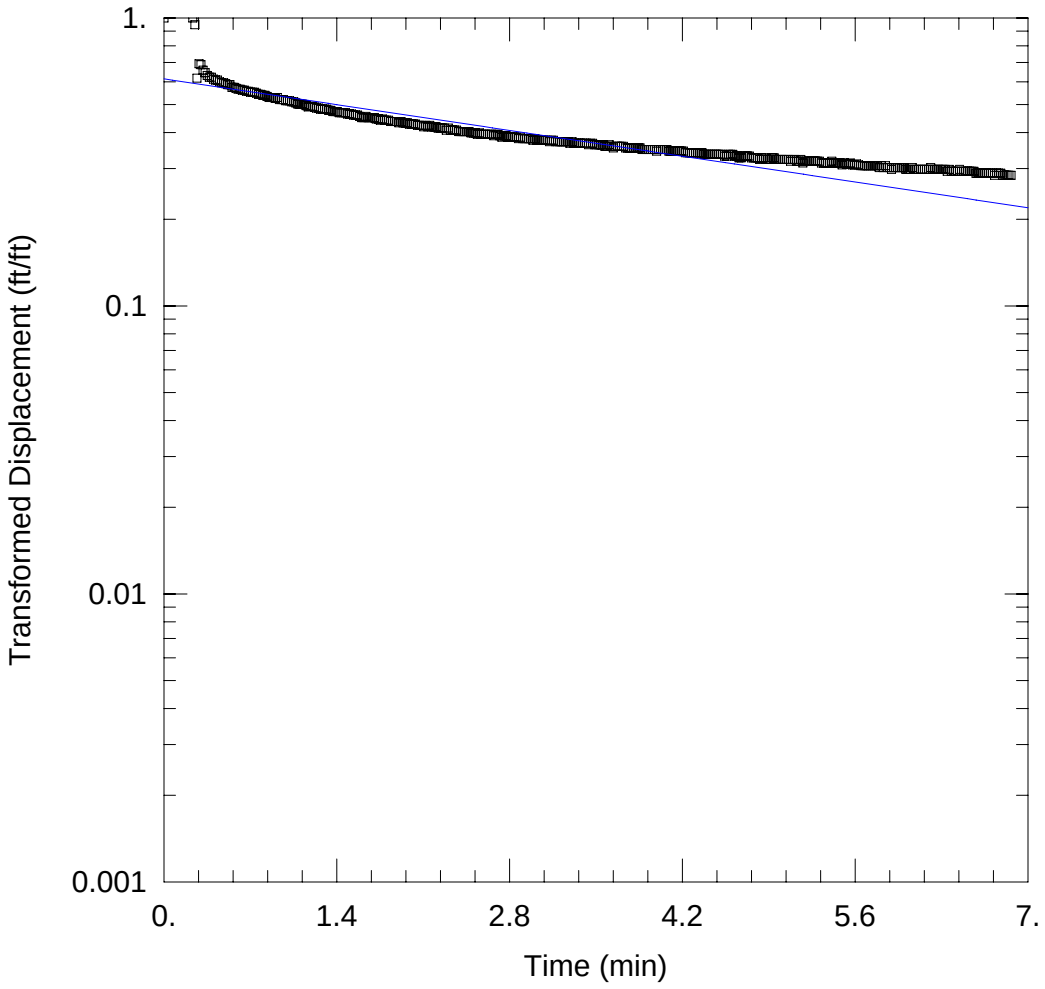
WELL DATA (BSMW0001)

Initial Displacement: 0.443 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.793 ft/day y0 = 0.2602 ft



BSMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW1-in2DGN.aqt
Date: 02/12/09 Time: 13:40:45

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft Anisotropy Ratio (Kz/Kr): 1.

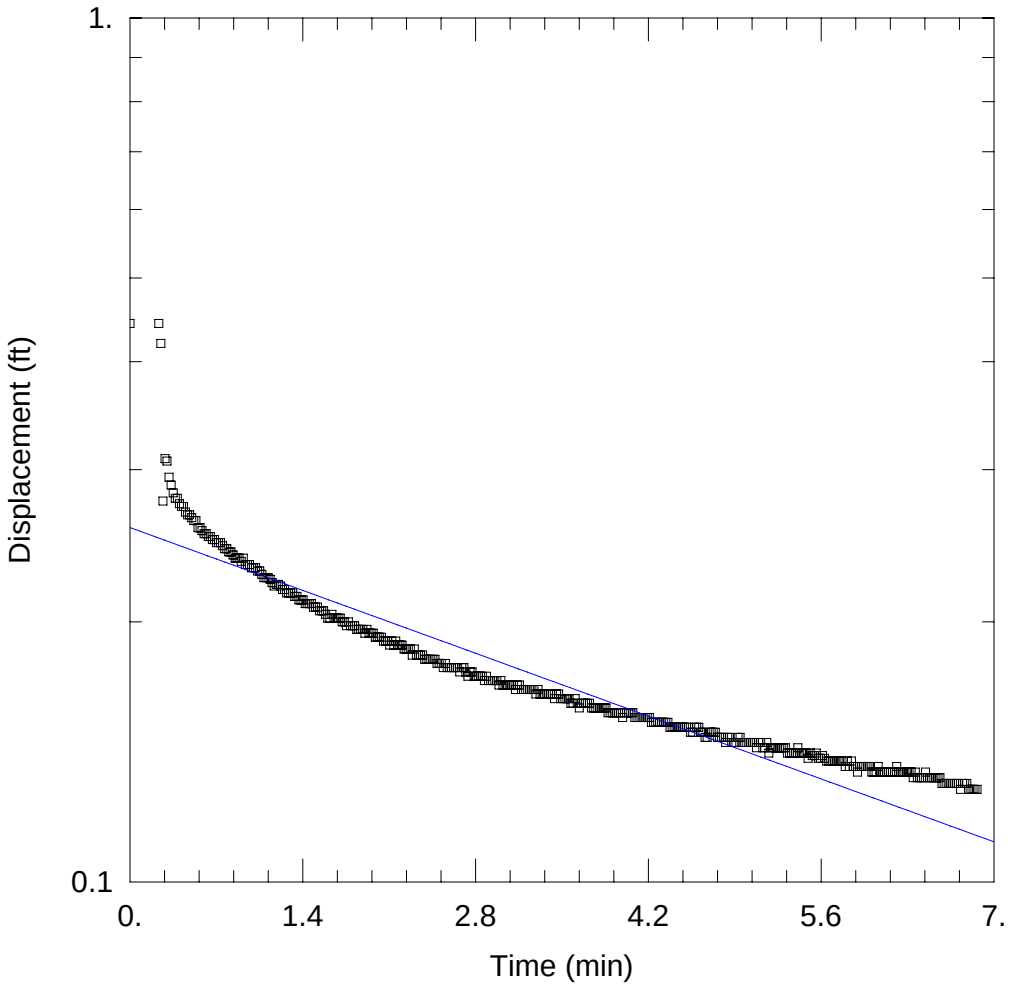
WELL DATA (BSMW0001)

Initial Displacement: 0.443 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 1.183 ft/day y0 = 0.2745 ft



BSMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW1-in2HV.aqt
Date: 02/12/09 Time: 13:41:16

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft Anisotropy Ratio (Kz/Kr): 1.

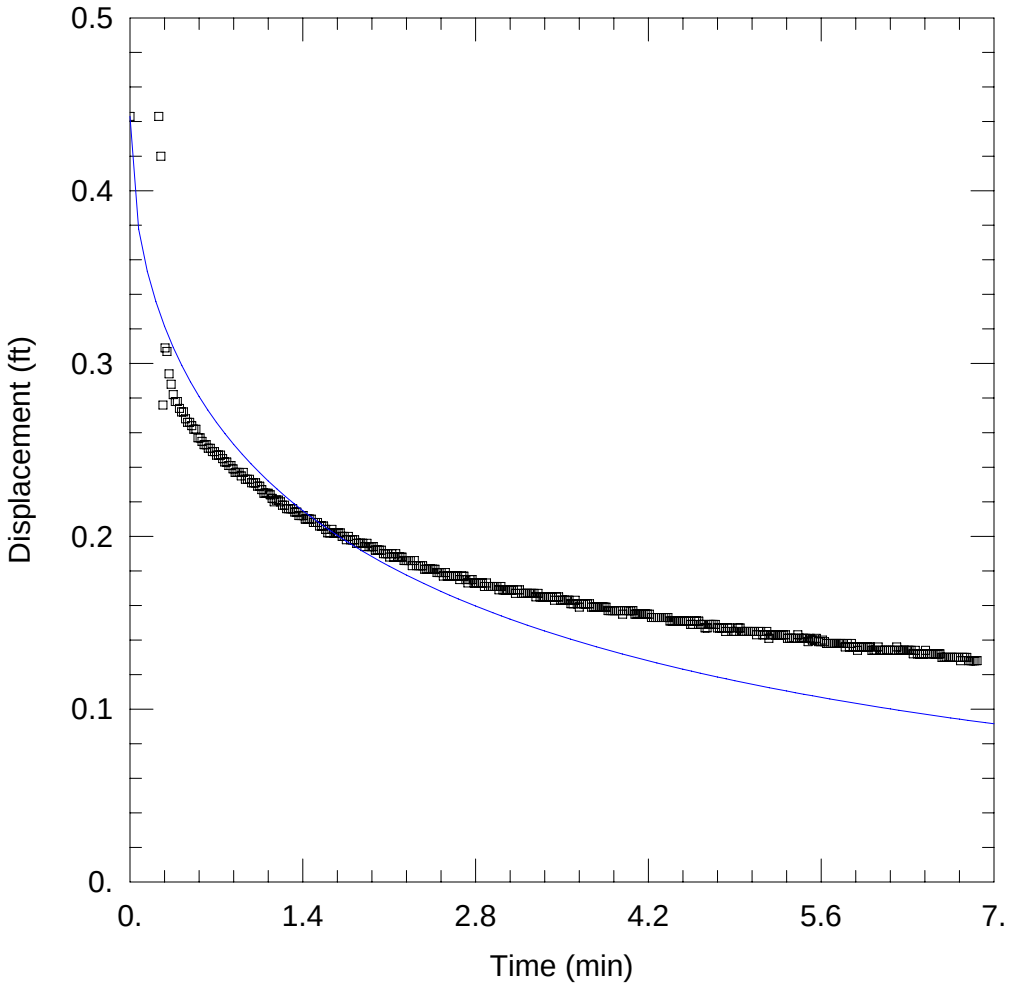
WELL DATA (BSMW0001)

Initial Displacement: 0.443 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.268 ft/day y0 = 0.2571 ft



BSMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW1-in2KGS.aqt
Date: 02/12/09 Time: 13:41:46

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft

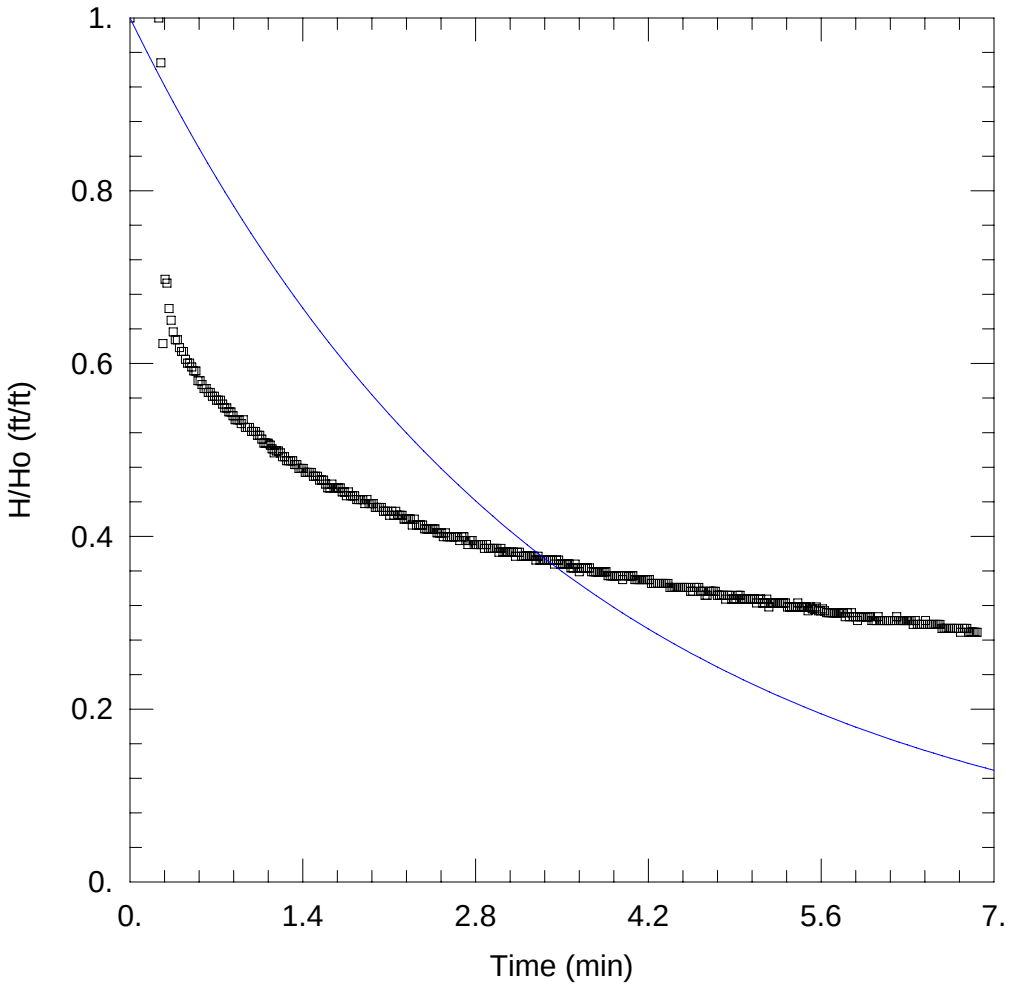
WELL DATA (BSMW0001)

Initial Displacement: 0.443 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.1207 ft/day
Ss = 0.002486 ft^{-1}
Kz/Kr = 1.



BSMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW1-in2SG.aqt
Date: 02/12/09 Time: 13:42:14

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft Anisotropy Ratio (Kz/Kr): 1.

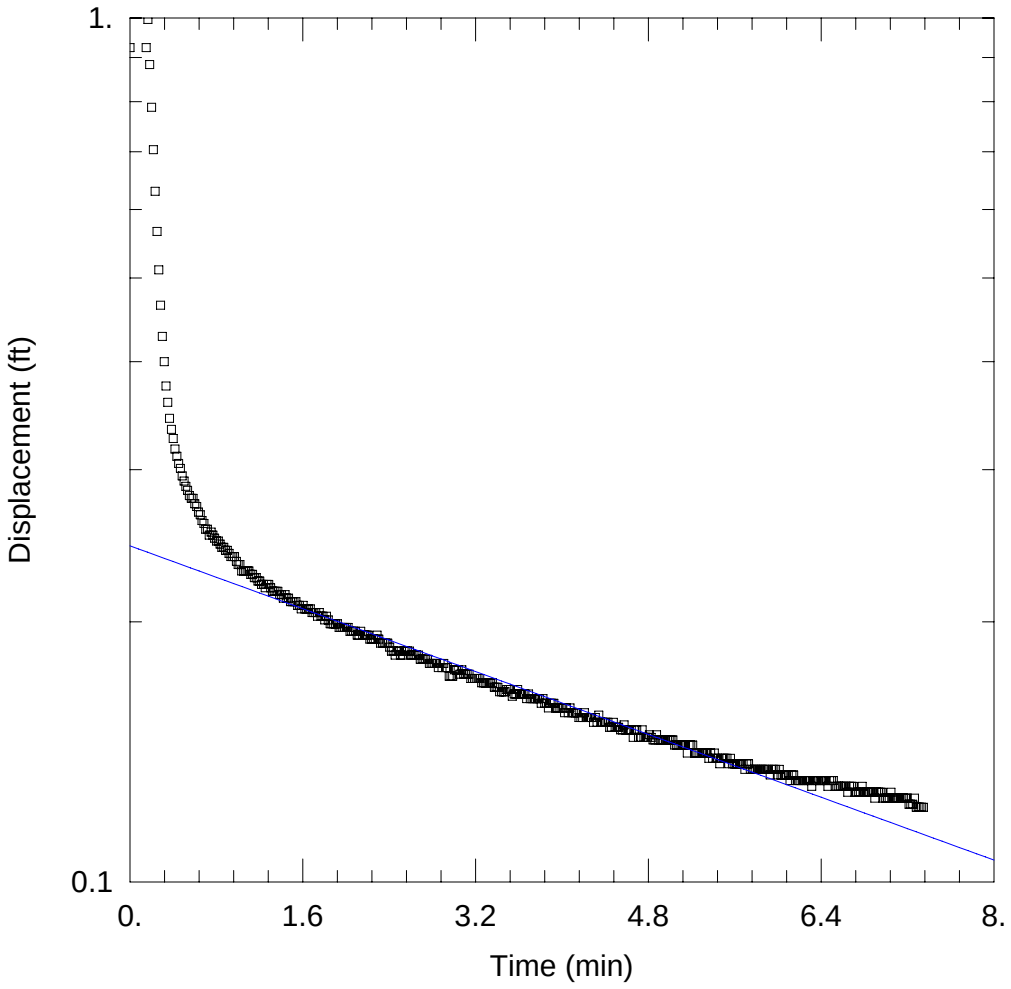
WELL DATA (BSMW0001)

Initial Displacement: 0.443 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.2805 ft/day Le = 0.1 ft



BSMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW1-out1BR.aqt
Date: 02/12/09 Time: 14:18:37

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001.out1
Test Date: 9/8/2005

AQUIFER DATA

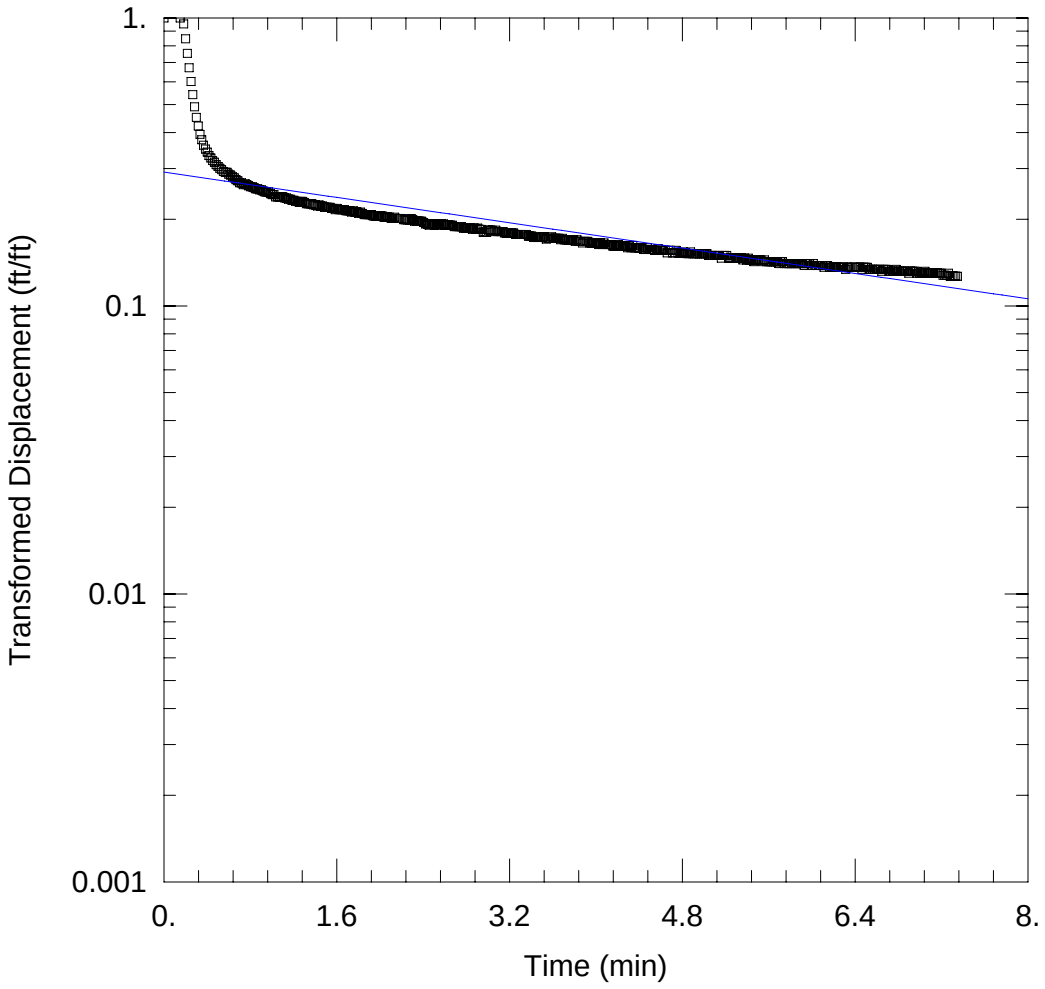
Saturated Thickness: 40.23 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0001)

Initial Displacement: 0.924 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6975 ft/day
y0 = 0.2449 ft



BSMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW1-out1DGN.aqt
Date: 02/12/09 Time: 14:19:03

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001.out1
Test Date: 9/8/2005

AQUIFER DATA

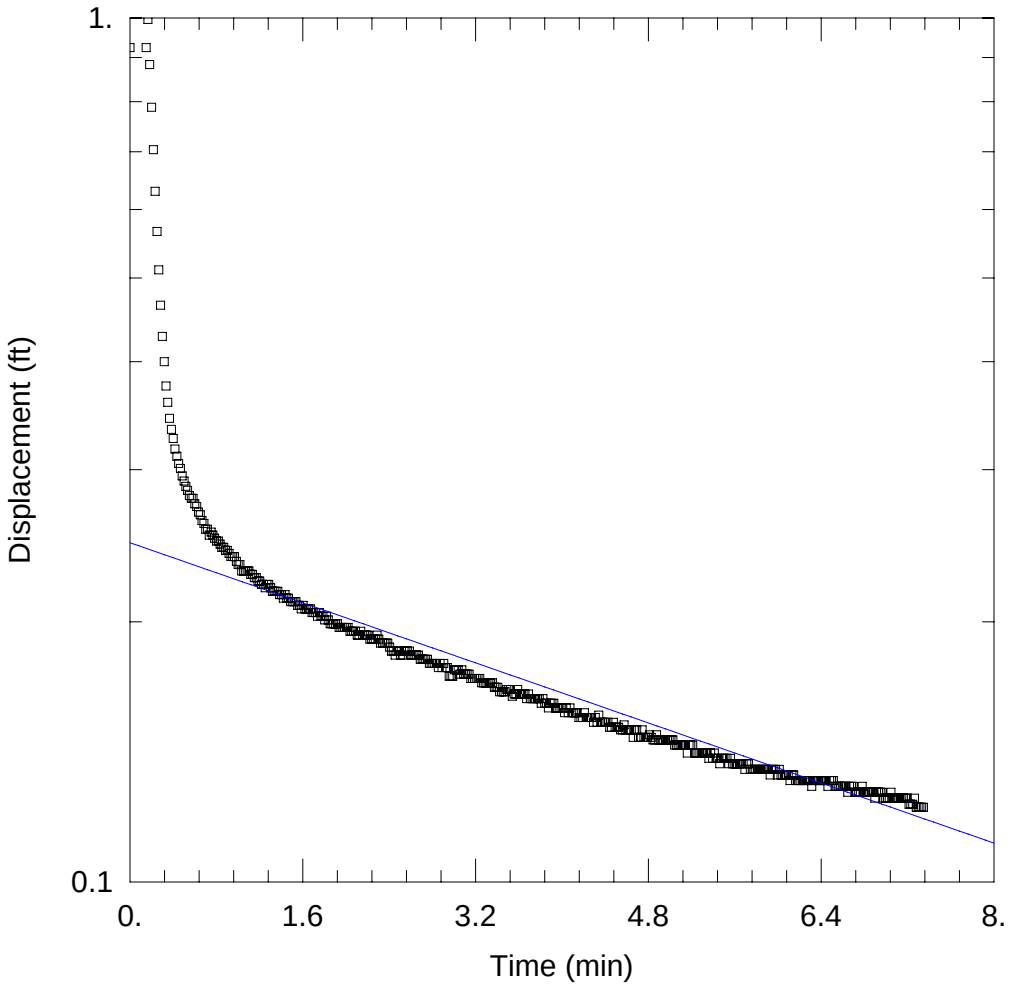
Saturated Thickness: 40.23 ft
Anisotropy Ratio (Kz/Kr): 0.02399

WELL DATA (BSMW0001)

Initial Displacement: 0.924 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Dagan
K = 1.018 ft/day
y0 = 0.2785 ft



BSMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW1-out1HV.aqt
Date: 02/12/09 Time: 14:19:27

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001.out1
Test Date: 9/8/2005

AQUIFER DATA

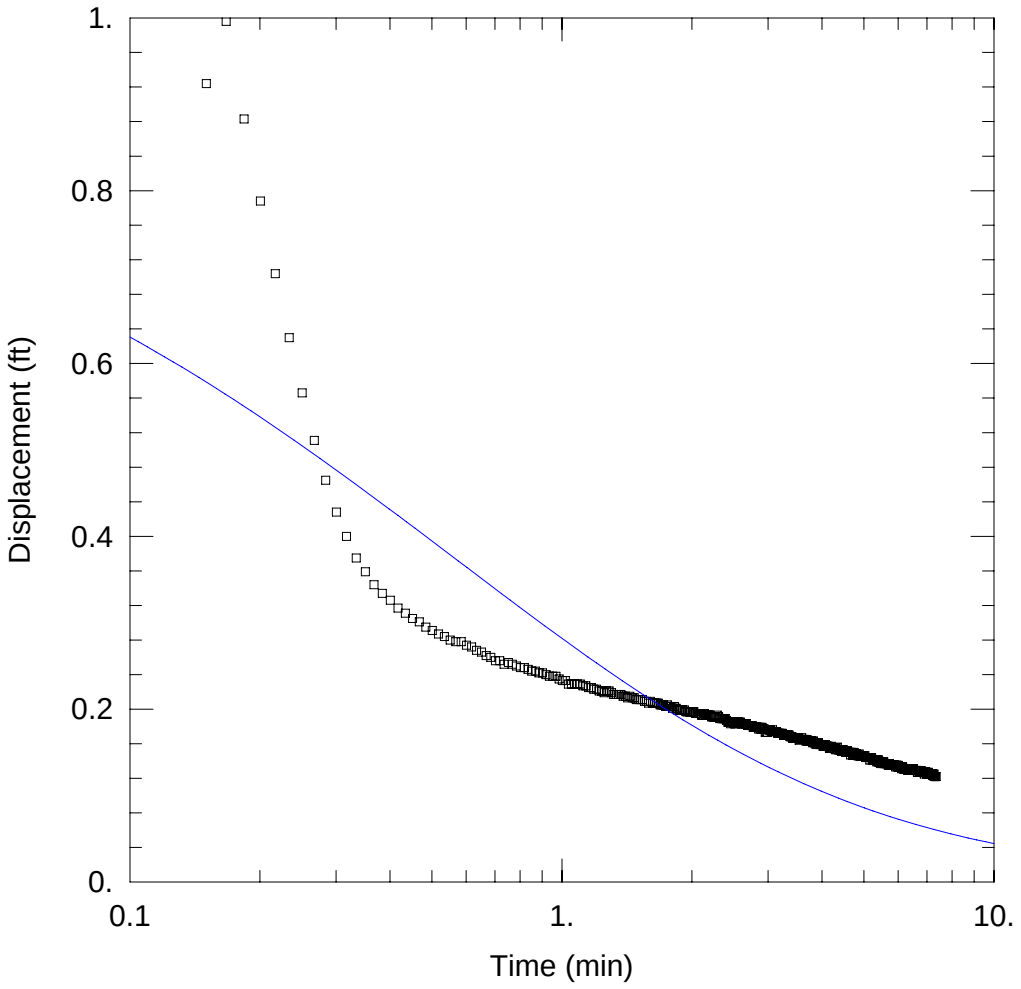
Saturated Thickness: 40.23 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0001)

Initial Displacement: 0.924 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 1.06 ft/day
y0 = 0.2469 ft



BSMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW1-out1KGS.aqt
Date: 02/12/09 Time: 14:19:48

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001.out1
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft

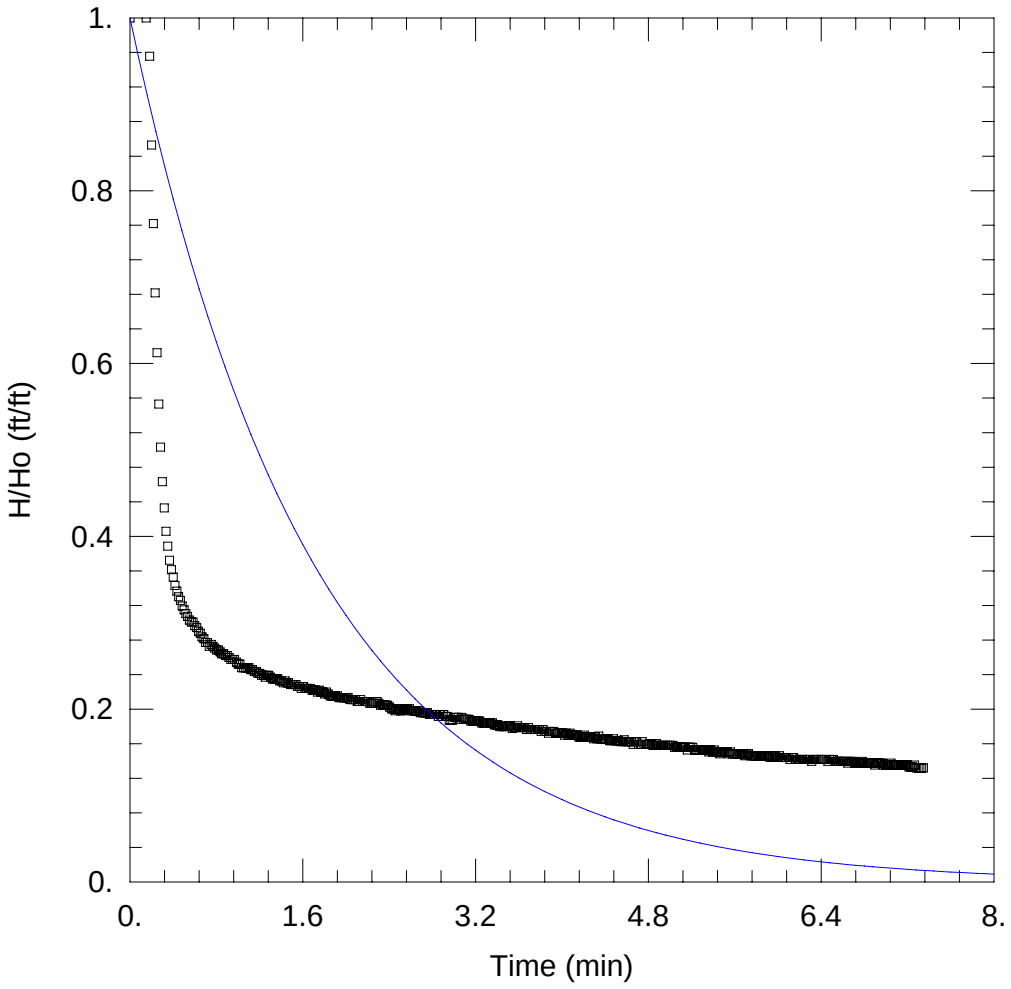
WELL DATA (BSMW0001)

Initial Displacement: 0.924 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.4806 ft/day
Kz/Kr = 0.02399
Ss = 0.002486 ft^{-1}



BSMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW1-out1SG.aqt
Date: 02/12/09 Time: 14:20:15

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001.out1
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft Anisotropy Ratio (Kz/Kr): 0.02399

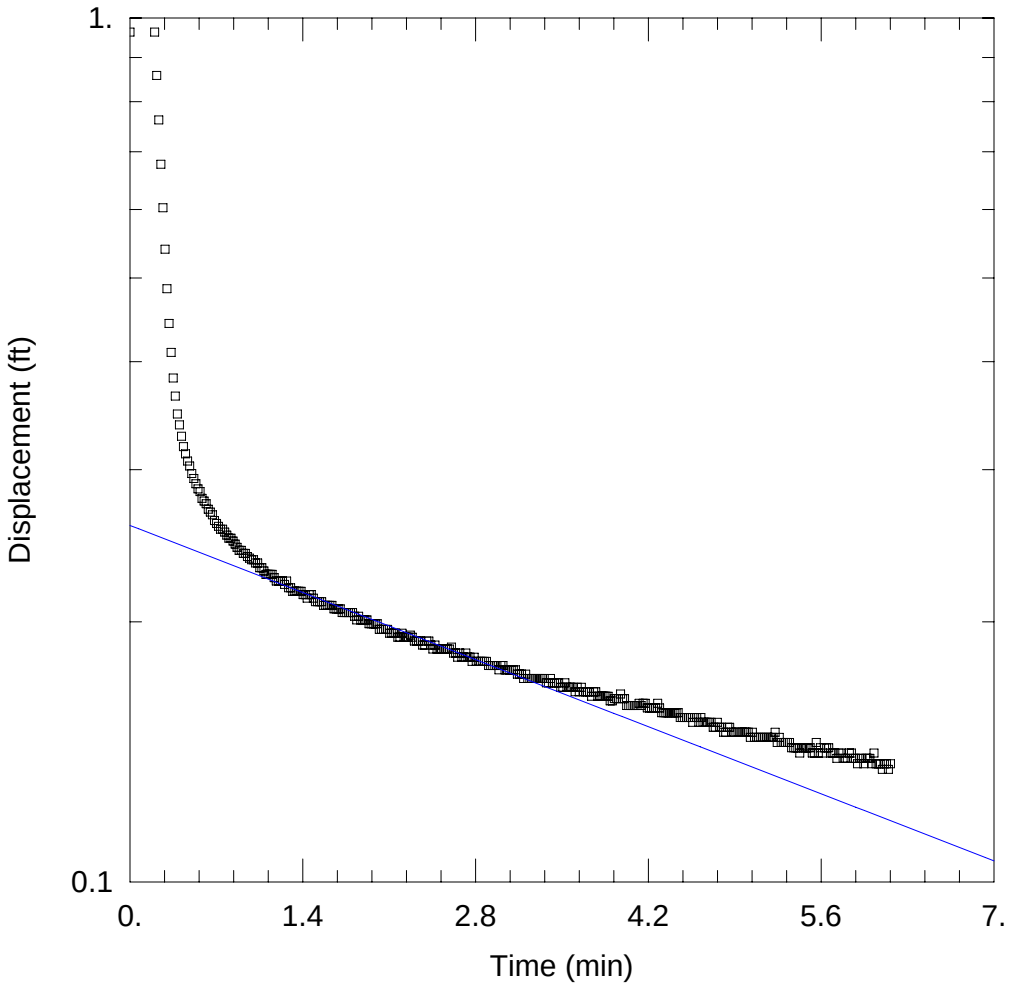
WELL DATA (BSMW0001)

Initial Displacement: 0.924 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.9631 ft/day Le = 0.1 ft



BSMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW1-out2BR.aqt
Date: 02/12/09 Time: 14:20:41

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

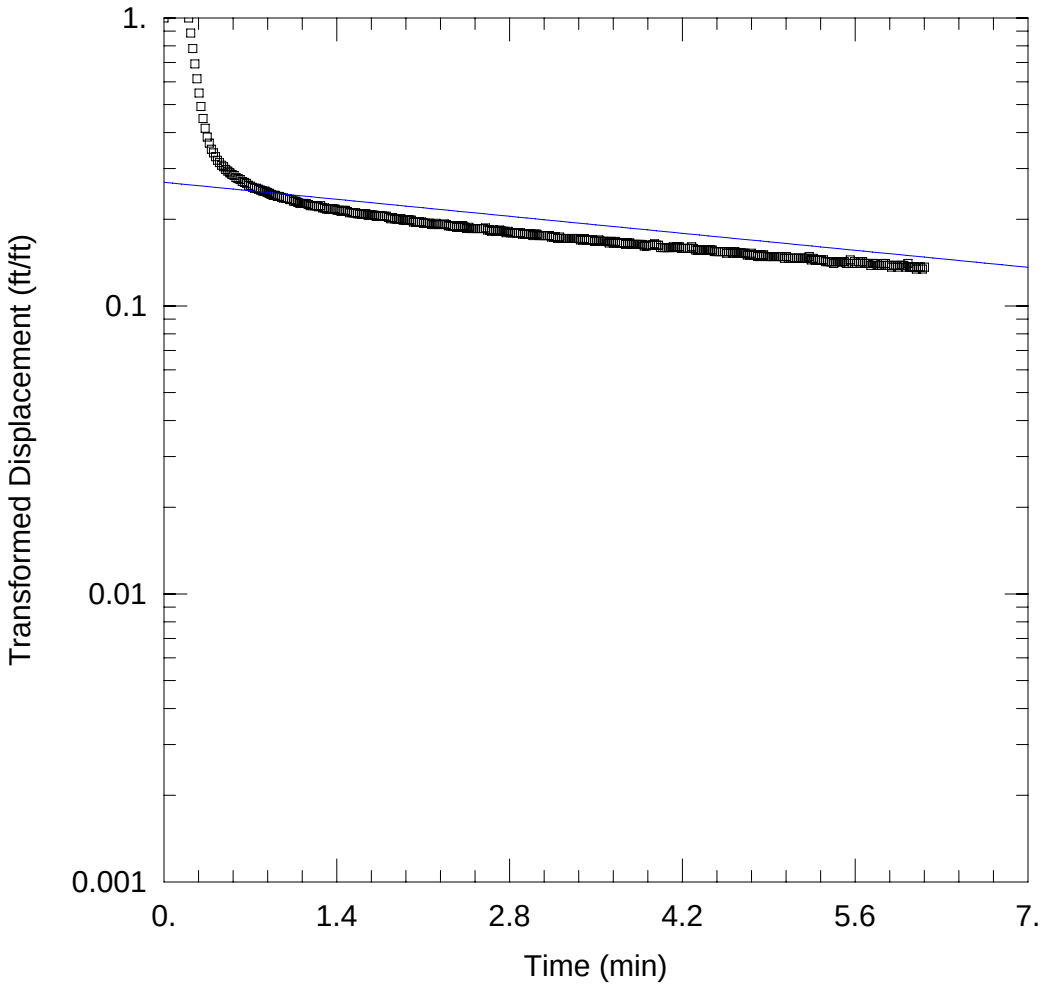
Saturated Thickness: 40.23 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0001)

Initial Displacement: 0.963 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.8509 ft/day
y0 = 0.2586 ft



BSMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW1-out2DGN.aqt
Date: 02/12/09 Time: 14:21:10

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft Anisotropy Ratio (Kz/Kr): 1.

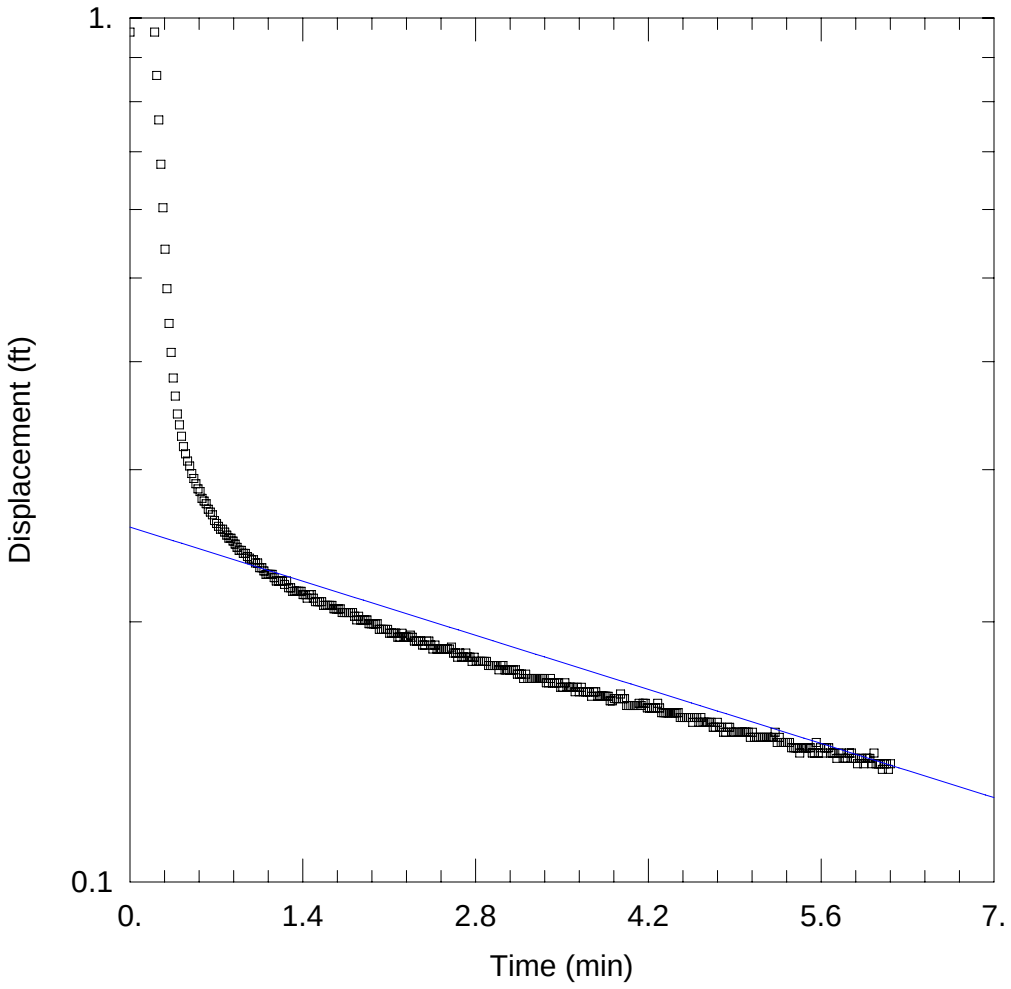
WELL DATA (BSMW0001)

Initial Displacement: 0.963 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 0.78 ft/day y0 = 0.2682 ft



BSMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW1-out2HV.aqt
Date: 02/12/09 Time: 14:21:36

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

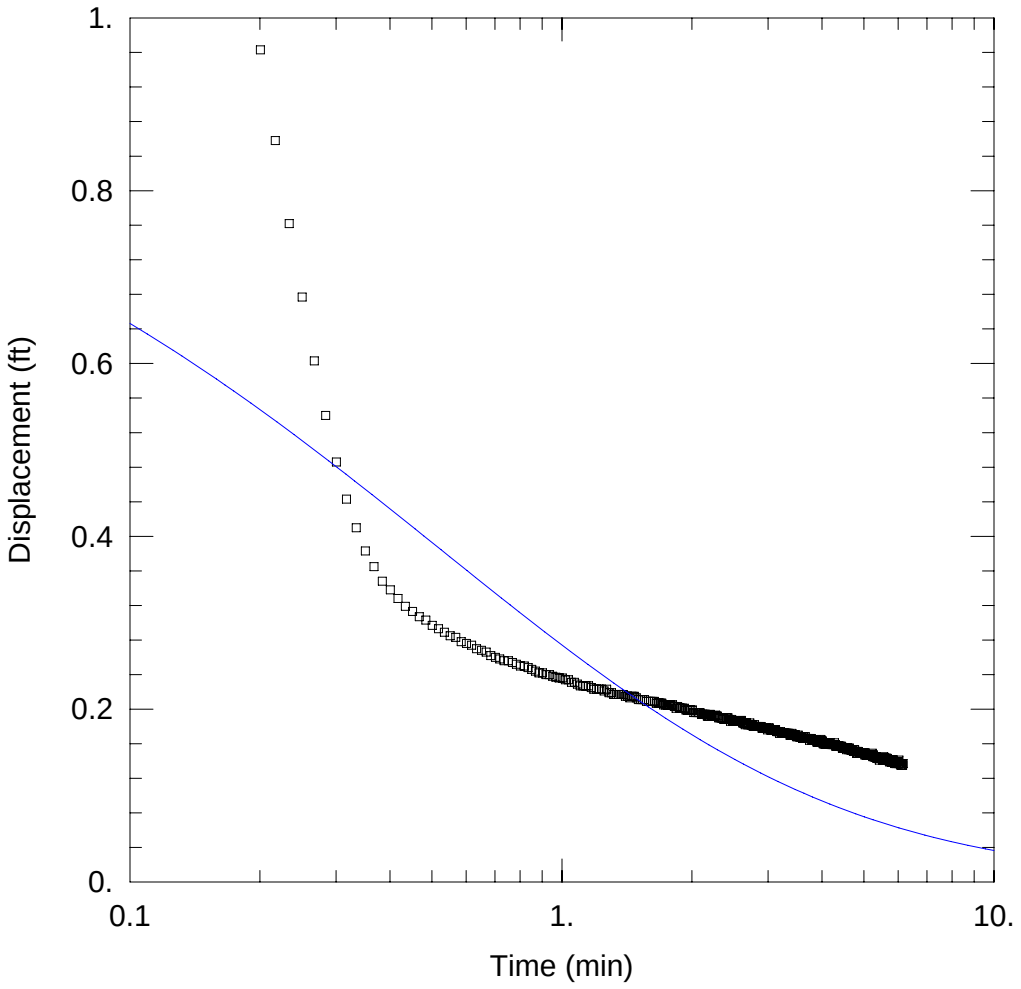
Saturated Thickness: 40.23 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0001)

Initial Displacement: 0.963 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 1.091 ft/day
y0 = 0.2574 ft



BSMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW1-out2KGS.aqt
Date: 02/12/09 Time: 14:22:29

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.23 ft

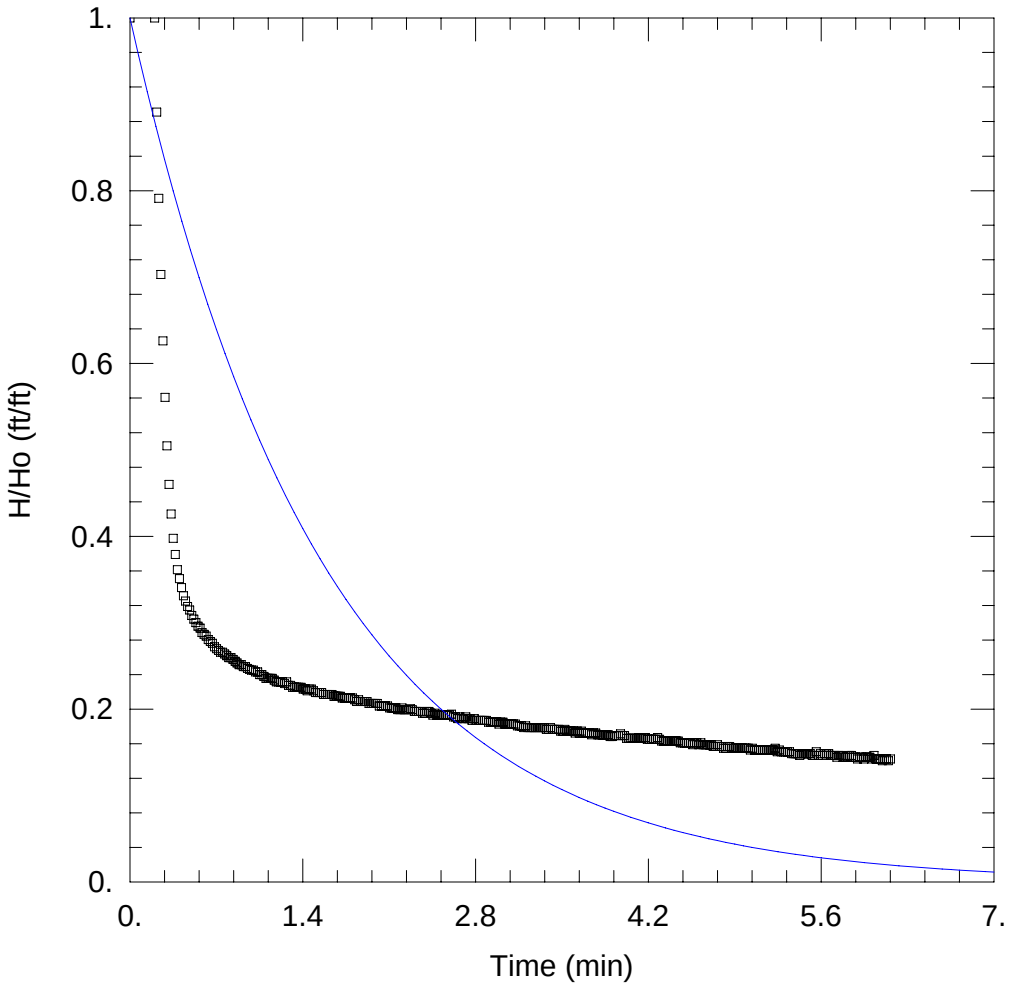
WELL DATA (BSMW0001)

Initial Displacement: 0.963 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.5194 ft/day
Kz/Kr = 1.
Ss = 0.002486 ft^{-1}



BSMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW1-out2SG.aqt
Date: 02/12/09 Time: 14:22:06

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0001
Test Date: 9/8/2005

AQUIFER DATA

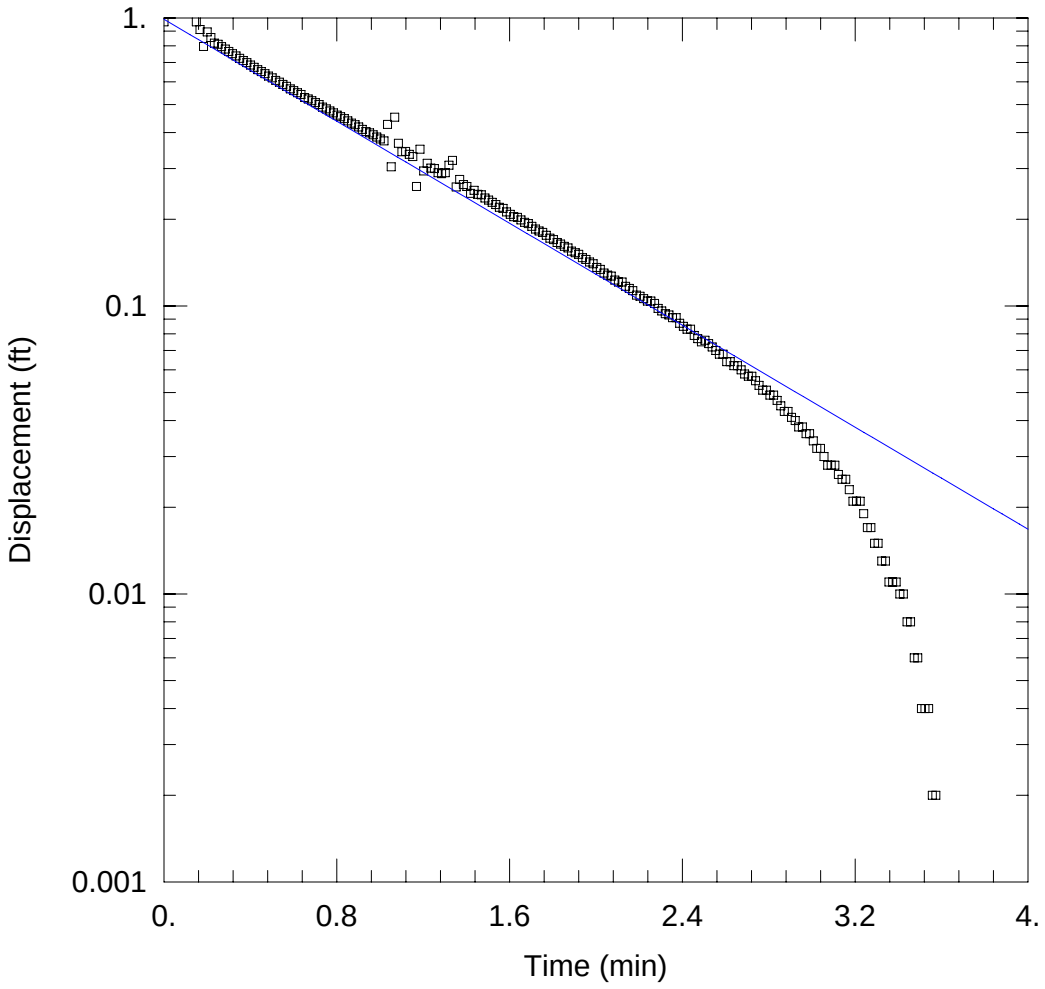
Saturated Thickness: 40.23 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0001)

Initial Displacement: 0.963 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.23 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 0.6128 ft/day
Le = 0.1 ft



BSMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW2-in1BR.aqt
Date: 02/12/09 Time: 13:43:03

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwing-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

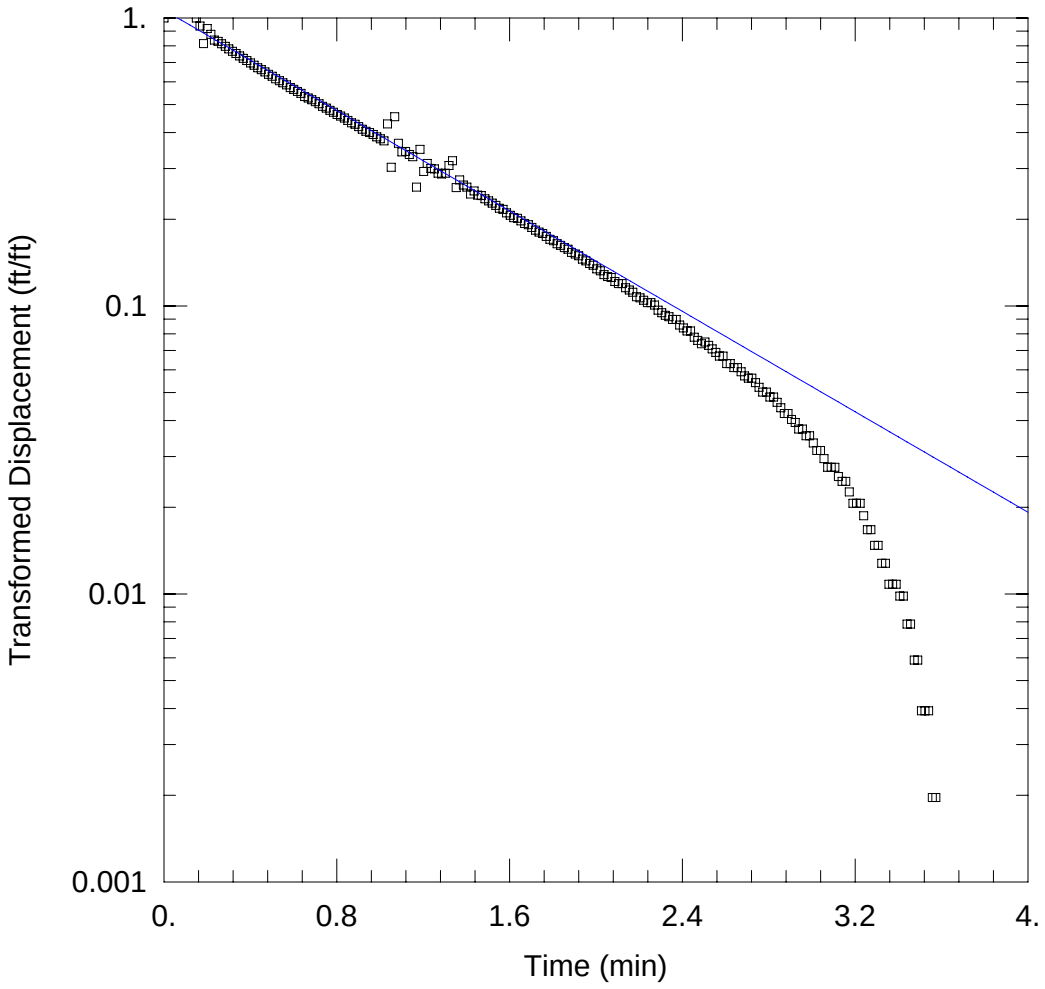
WELL DATA (BSMW0002)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 6.794 ft/day y0 = 0.9892 ft



BSMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW2-in1DGN.aqt
Date: 02/12/09 Time: 13:43:41

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwing-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

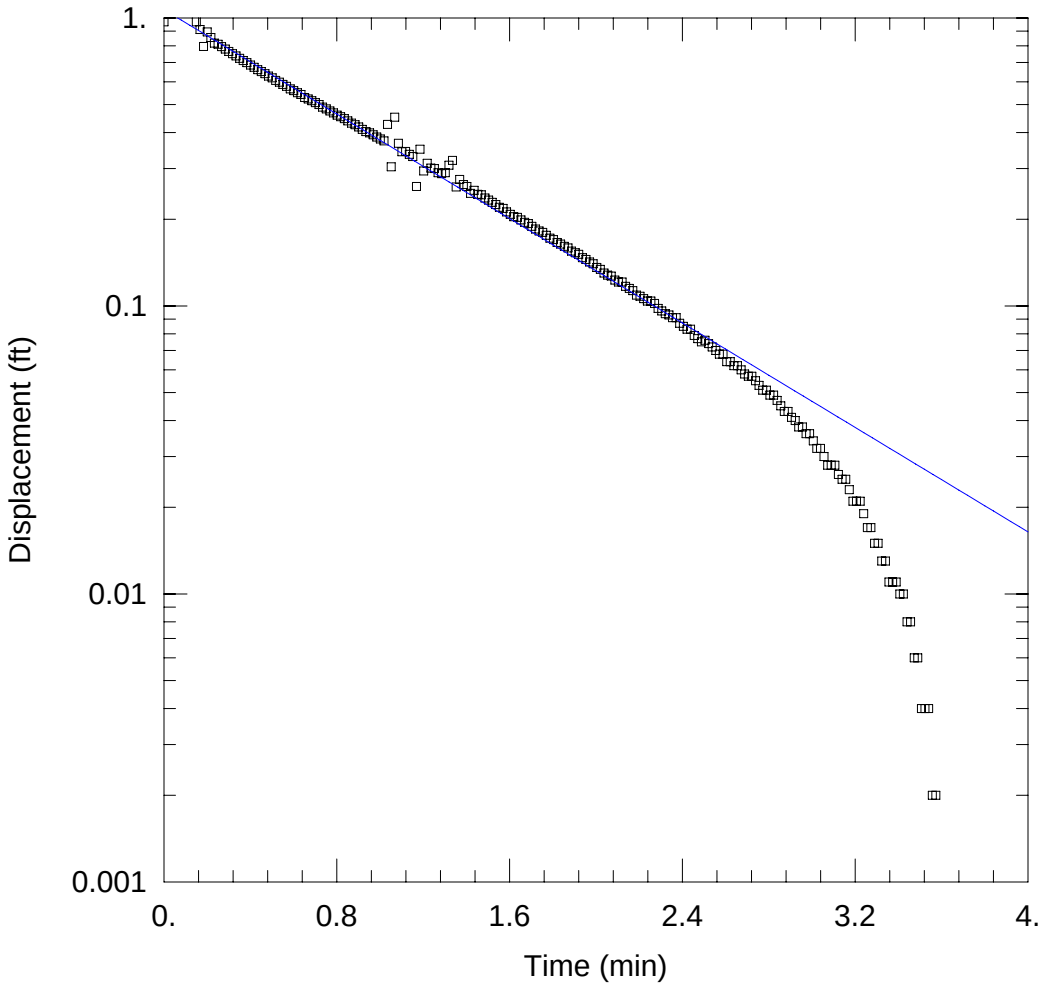
WELL DATA (BSMW0002)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 8.065 ft/day y0 = 1.029 ft



BSMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW2-in1HV.aqt
Date: 02/12/09 Time: 13:44:08

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwing-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

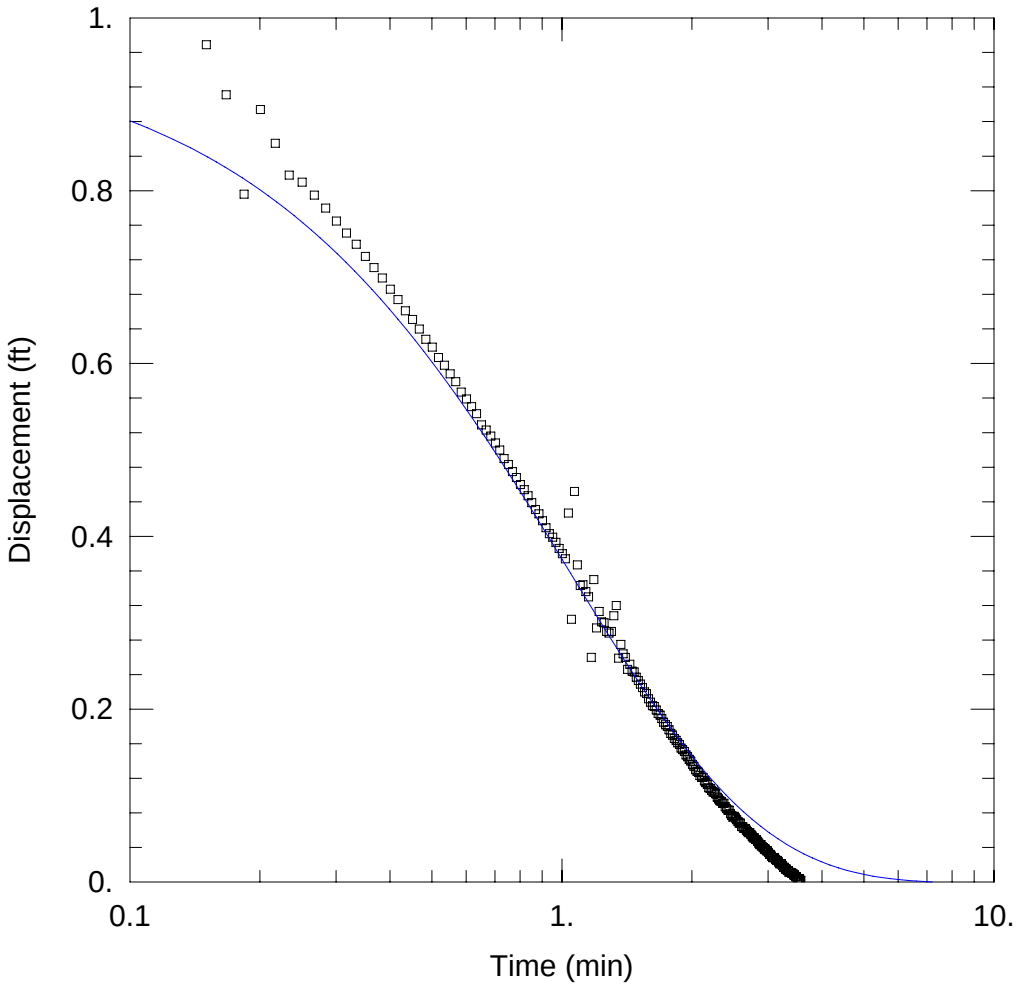
Saturated Thickness: 39.71 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0002)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 11.06 ft/day
y0 = 1.069 ft



BSMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW2-in1KGS.aqt
Date: 02/12/09 Time: 13:44:44

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwing-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft

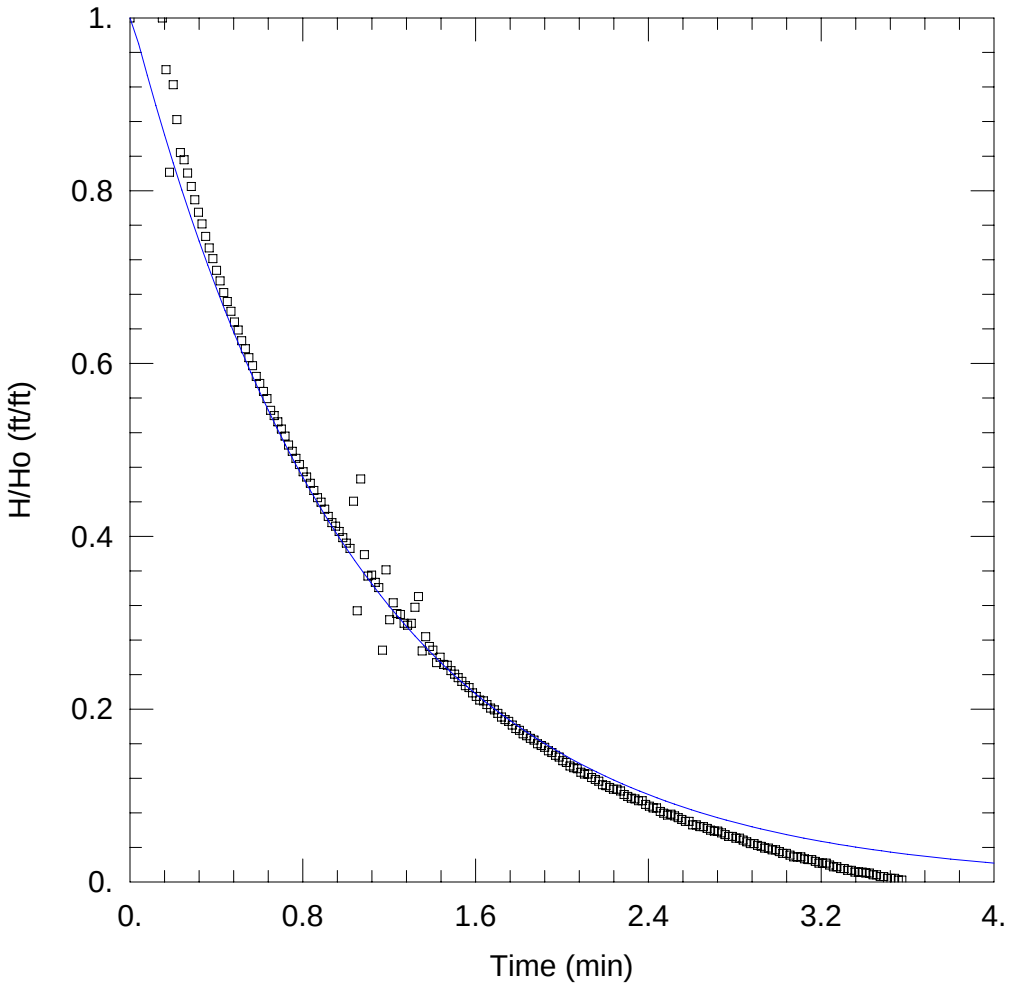
WELL DATA (BSMW0002)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 1.061 ft/day
Kz/Kr = 1.
Ss = 2.518E-12 ft^{-1}



BSMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW2-in1SG.aqt
Date: 02/12/09 Time: 13:45:13

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwing-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

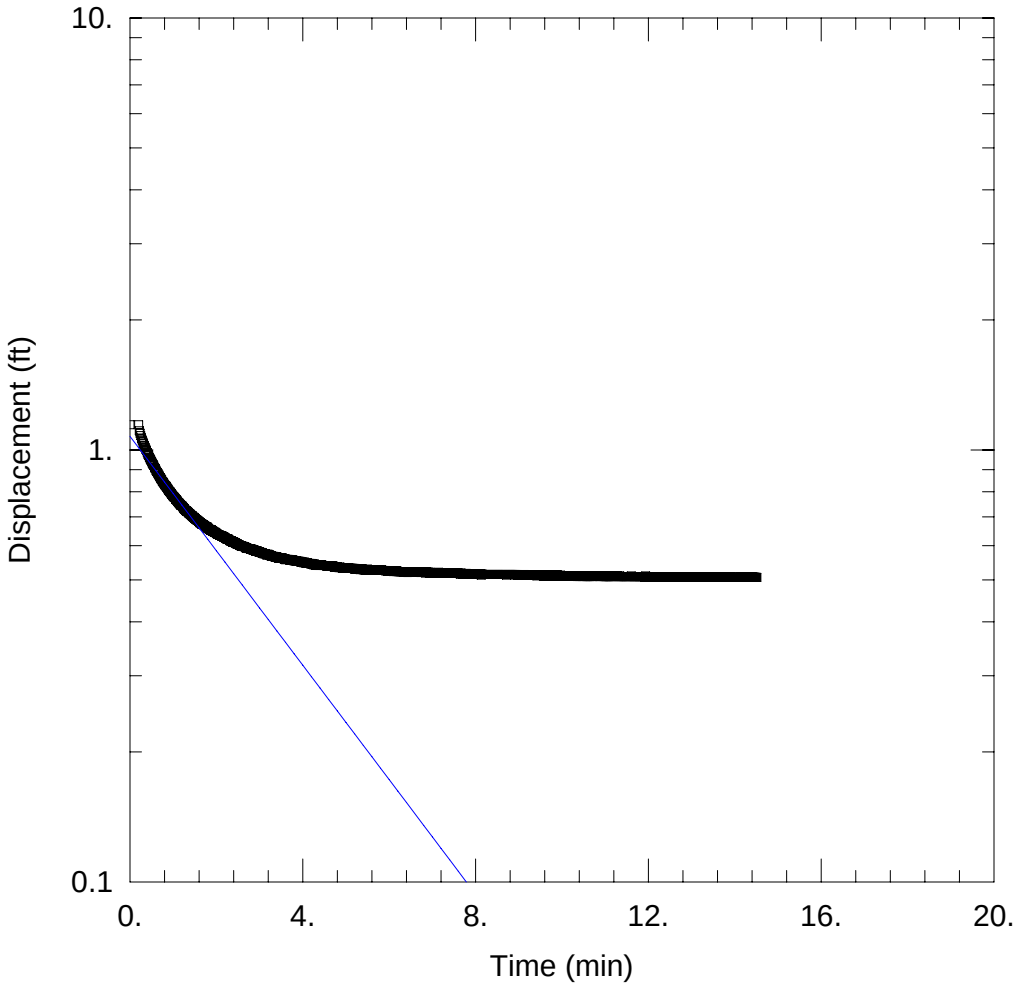
Saturated Thickness: 39.71 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0002)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 0.9124 ft/day
Le = 1000. ft



BSMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW2-in2BR.aqt
Date: 02/12/09 Time: 13:45:58

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

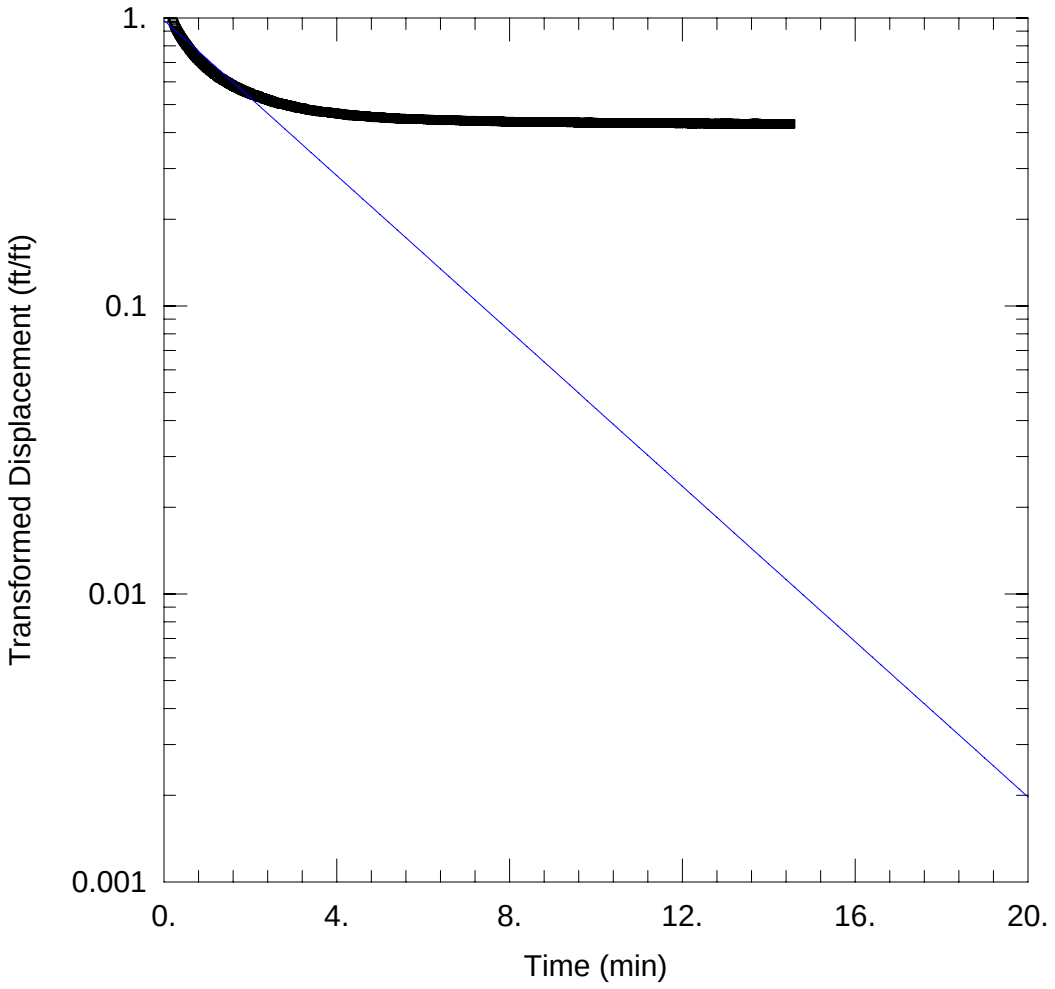
WELL DATA (BSMW0002)

Initial Displacement: 1.144 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.033 ft/day y0 = 1.075 ft



BSMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW2-in2DGN.aqt
Date: 02/12/09 Time: 13:46:24

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 0.002291

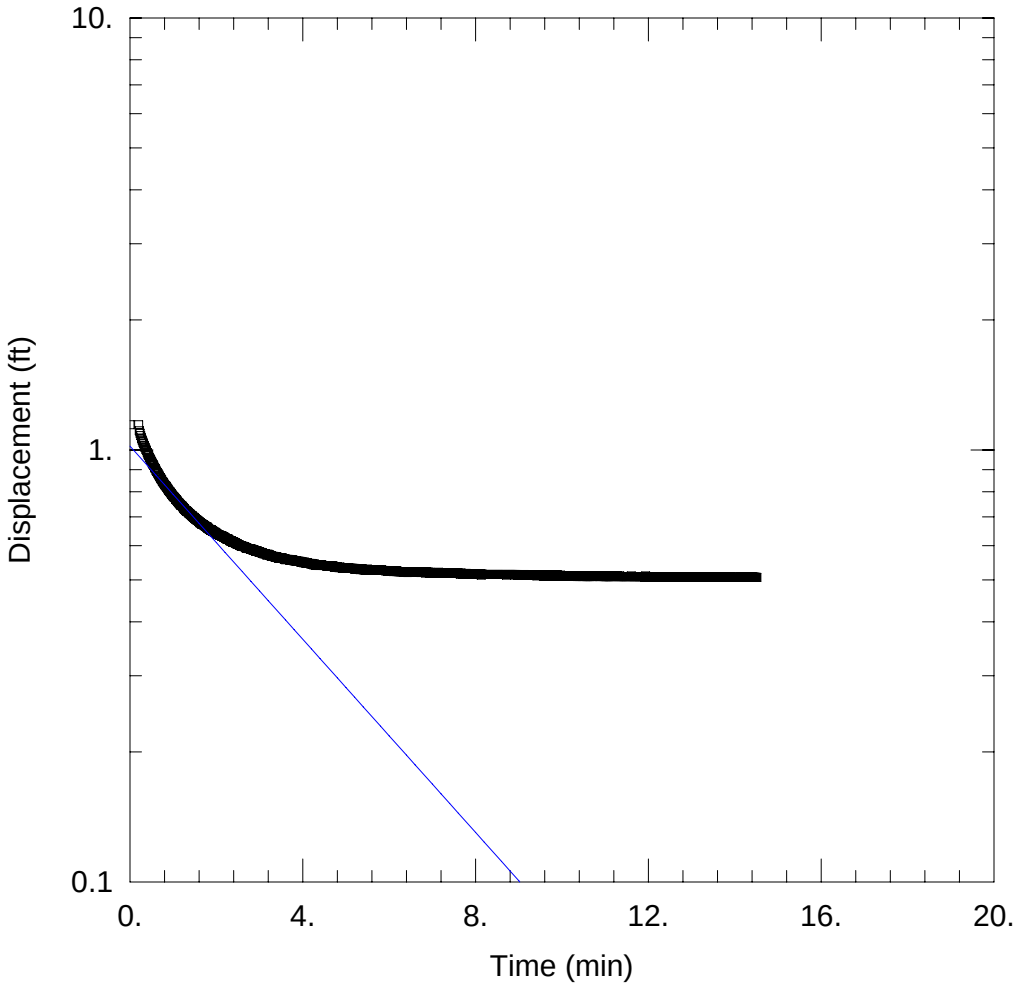
WELL DATA (BSMW0002)

Initial Displacement: 1.144 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 2.494 ft/day y0 = 1.123 ft



BSMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW2-in2HV.aqt
Date: 02/12/09 Time: 13:46:58

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

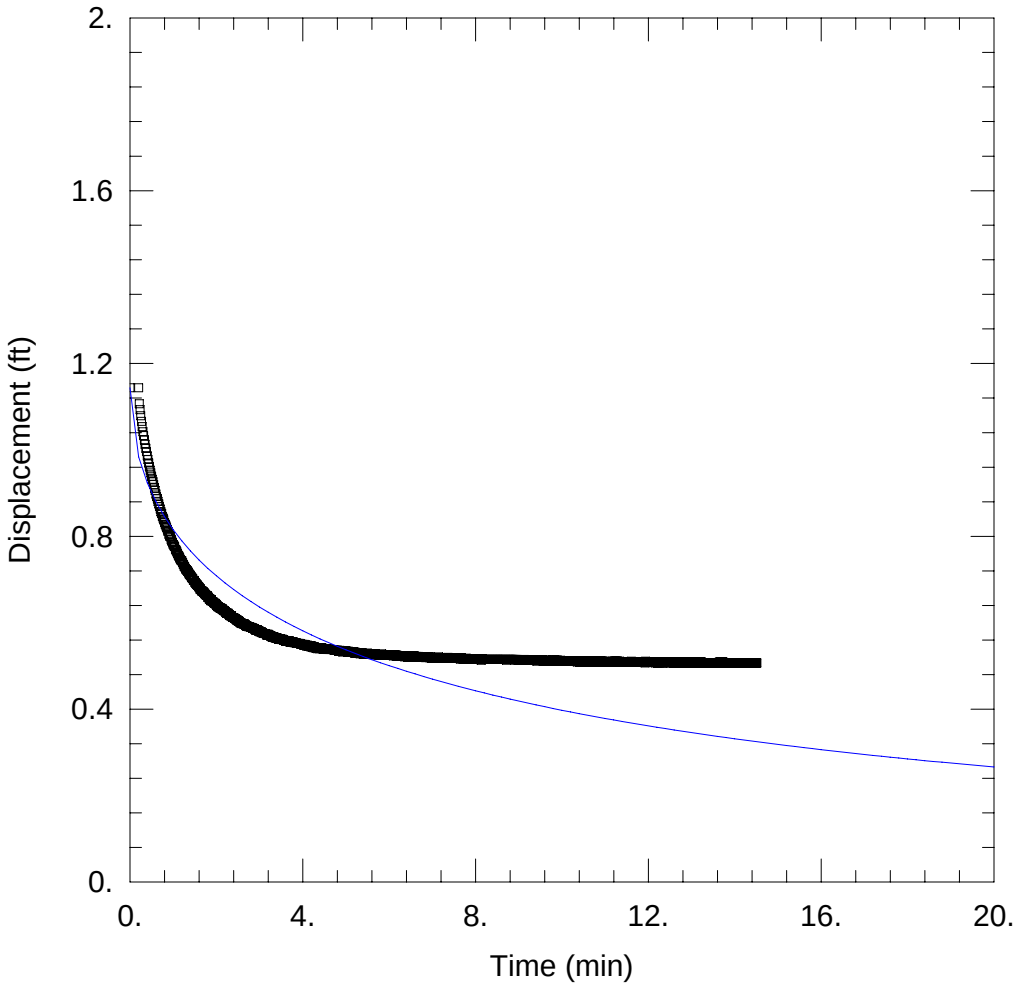
WELL DATA (BSMW0002)

Initial Displacement: 1.144 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.728 ft/day y0 = 1.021 ft



BSMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW2-in2KGS.aqt
Date: 02/12/09 Time: 13:47:29

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft

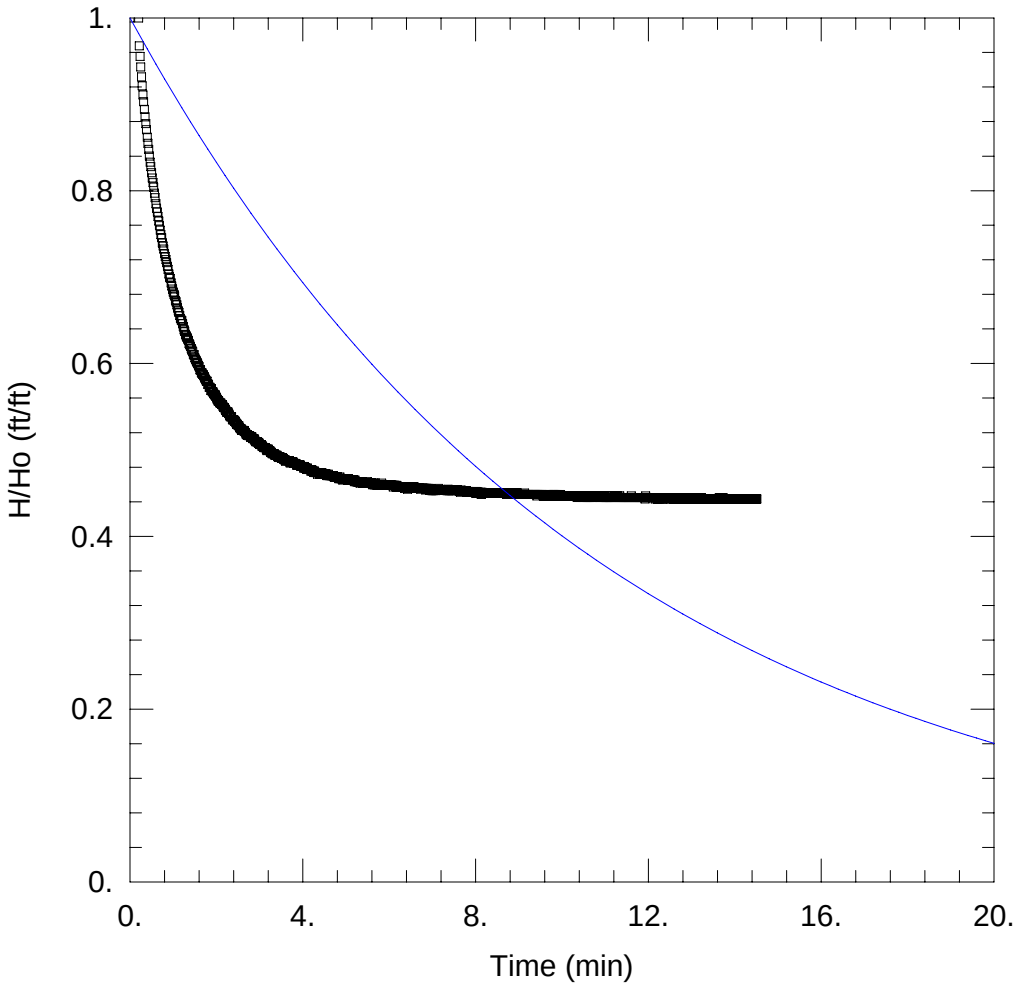
WELL DATA (BSMW0002)

Initial Displacement: 1.144 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.03744 ft/day
Kz/Kr = 0.002291
Ss = 0.002518 ft^{-1}



BSMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW2-in2SG.aqt
Date: 02/12/09 Time: 13:48:02

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 0.002291

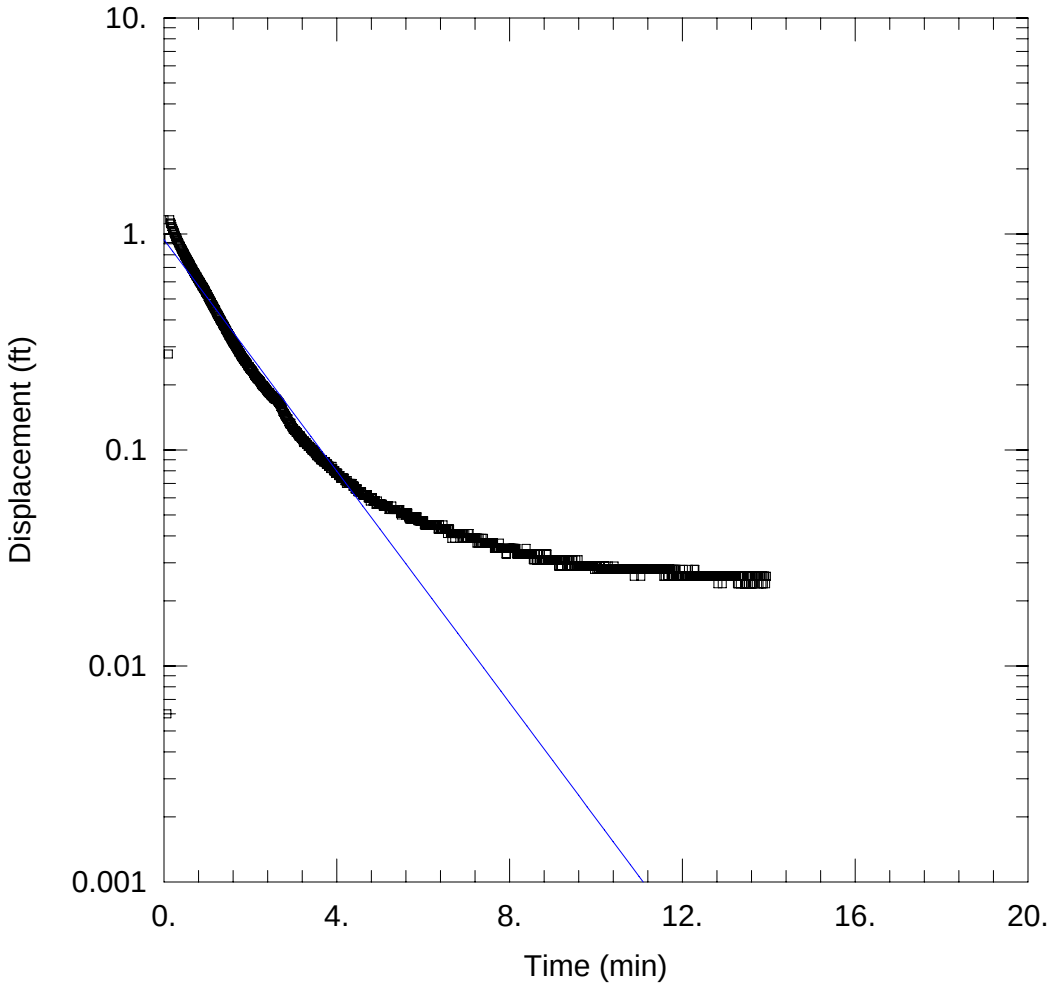
WELL DATA (BSMW0002)

Initial Displacement: 1.144 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.1992 ft/day Le = 0.1007 ft



BSMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW2-out1BR.aqt
Date: 02/12/09 Time: 14:23:22

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

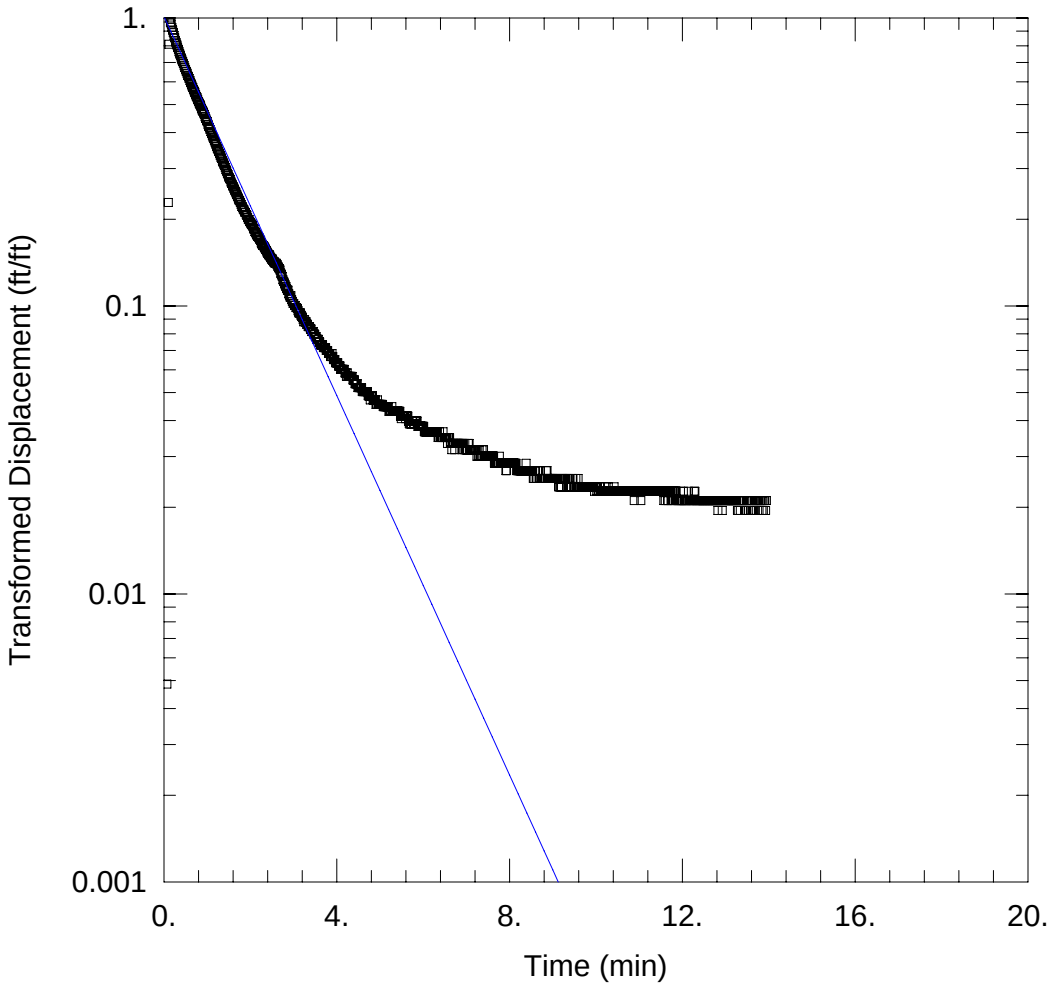
WELL DATA (BSMW0002)

Initial Displacement: 1.162 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.113 ft/day y0 = 0.9406 ft



BSMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW2-out1DGN.aqt
Date: 02/12/09 Time: 14:23:52

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

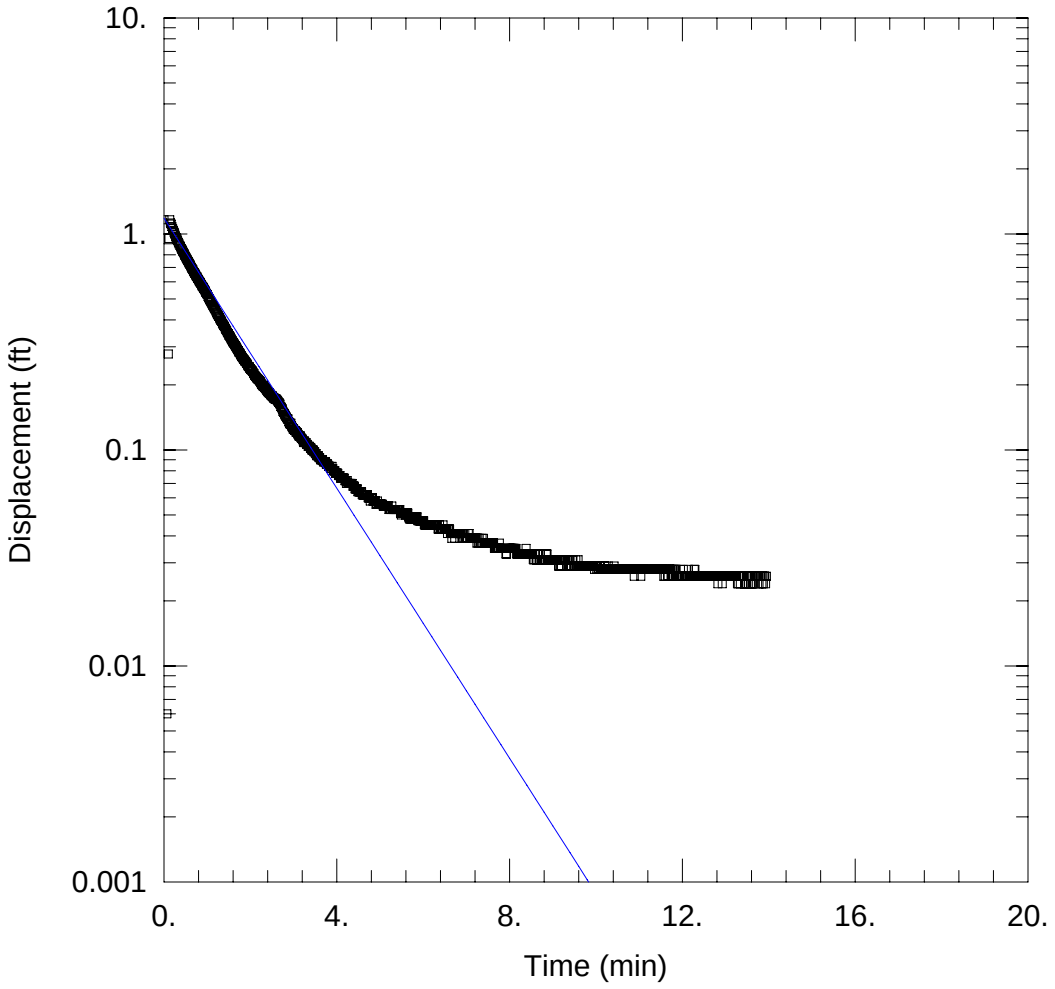
Saturated Thickness: 39.71 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0002)

Initial Displacement: 1.162 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Dagan
K = 6.093 ft/day
y0 = 1.176 ft



BSMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW2-out1HV.aqt
Date: 02/12/09 Time: 14:25:27

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

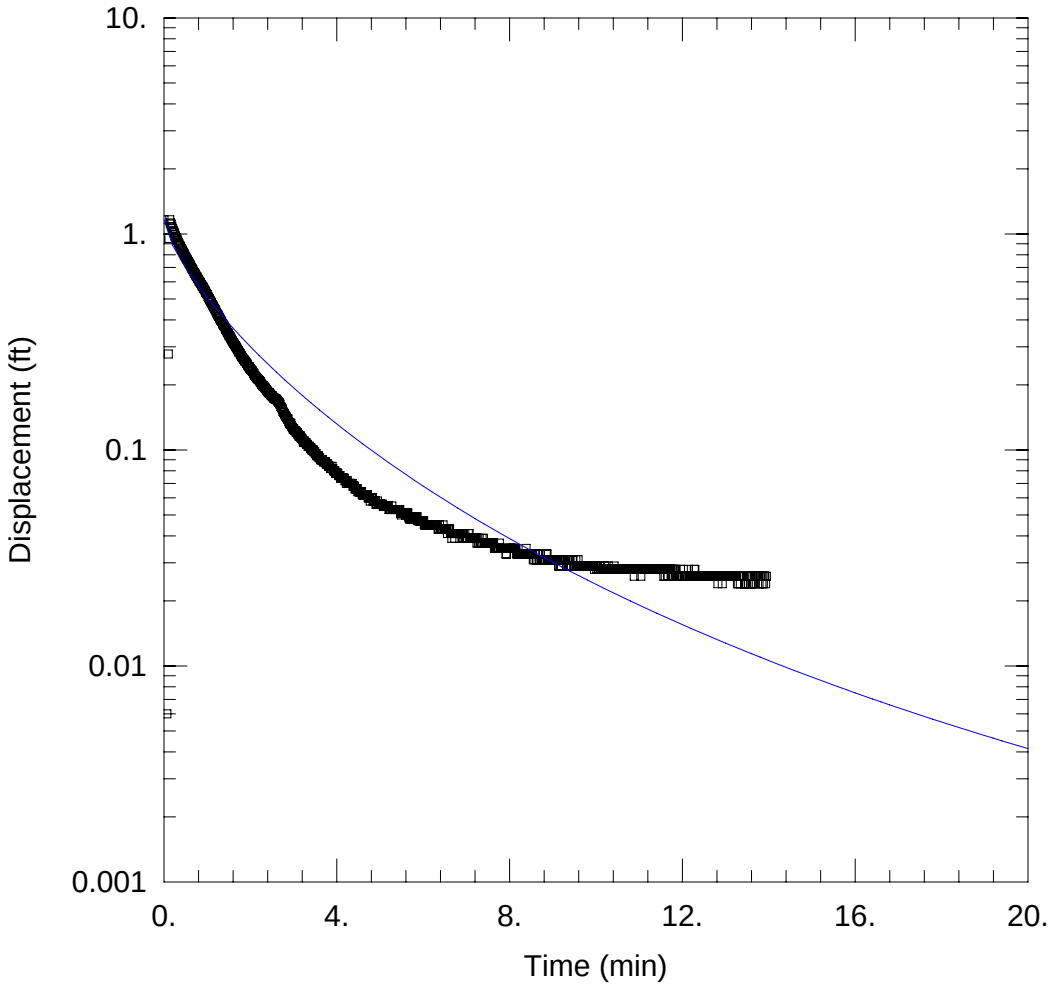
WELL DATA (BSMW0002)

Initial Displacement: 1.162 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 7.628 ft/day y0 = 1.183 ft



BSMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW2-out1KGS.aqt
Date: 02/12/09 Time: 14:25:54

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft

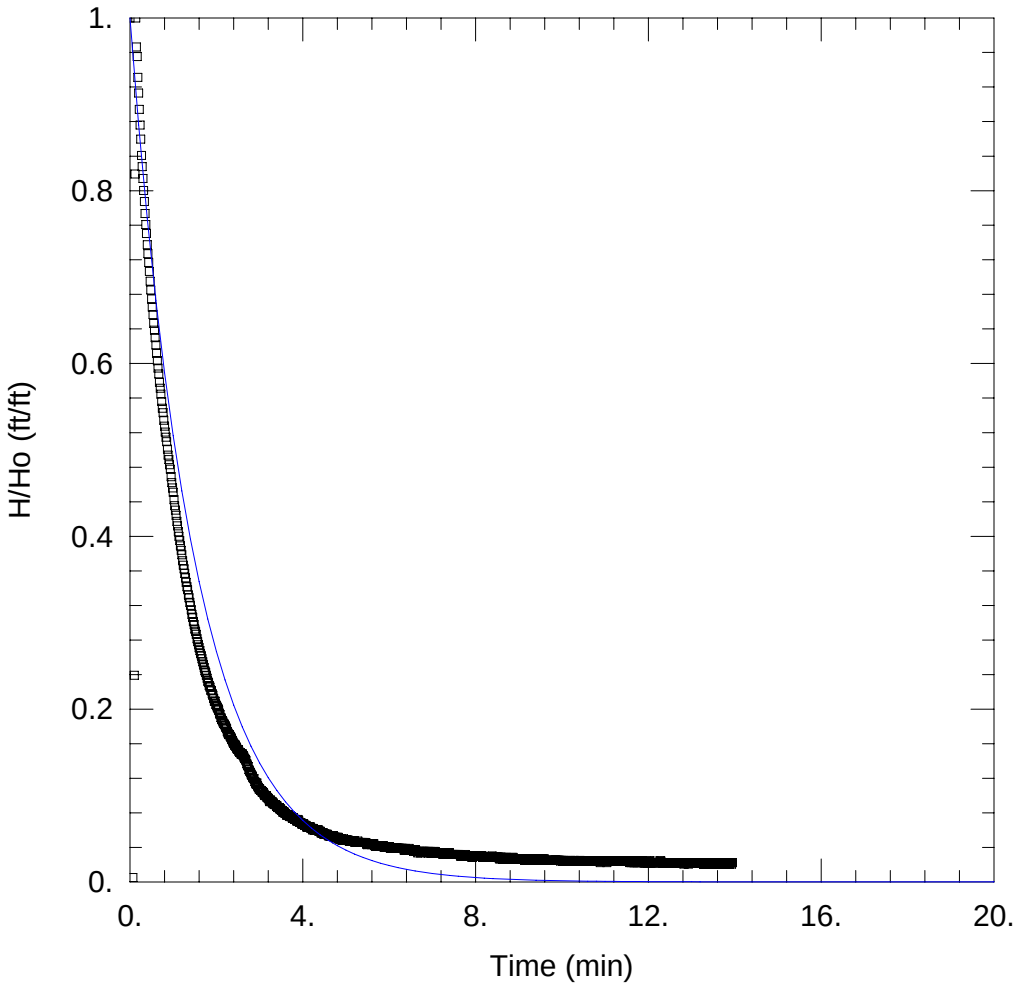
WELL DATA (BSMW0002)

Initial Displacement: 1.162 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.6342 ft/day
Kz/Kr = 1.
Ss = 0.0001768 ft^{-1}



BSMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW2-out1SG.aqt
Date: 02/12/09 Time: 14:27:06

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

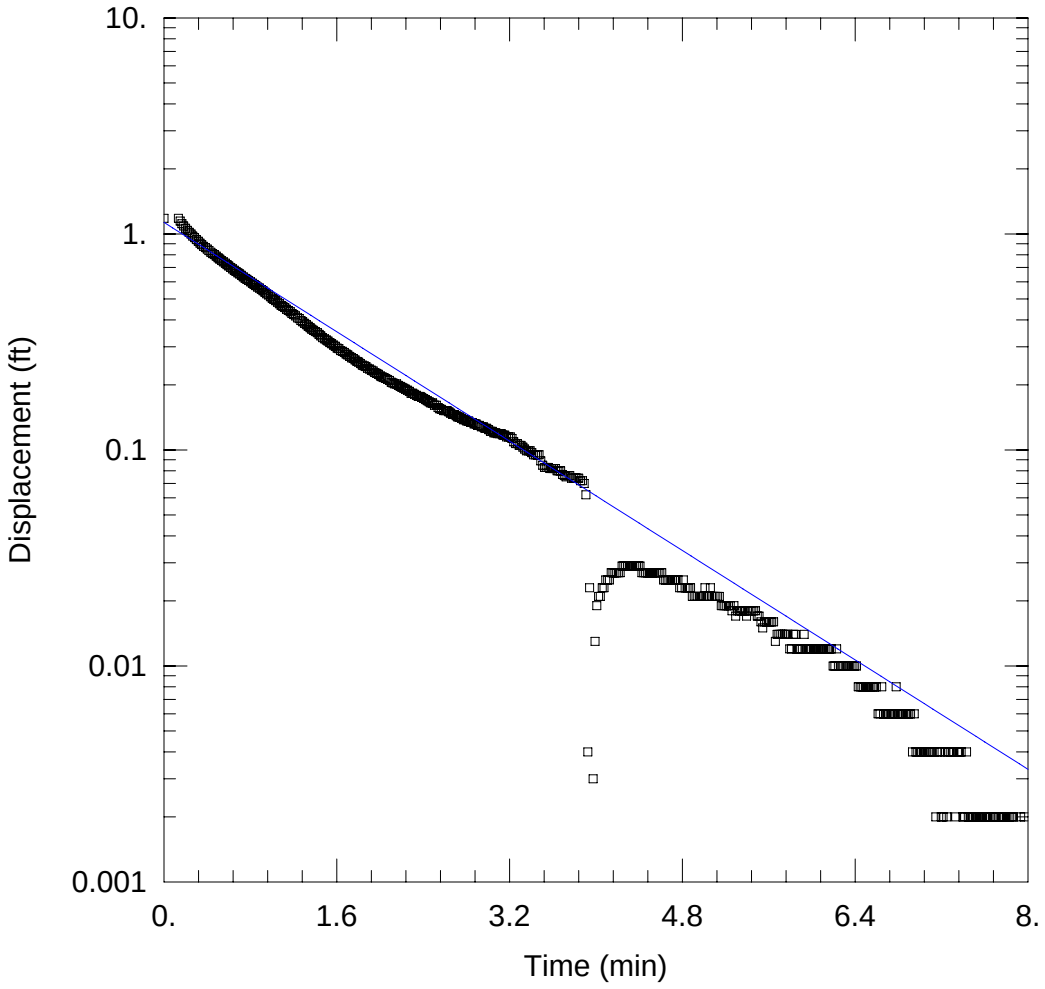
WELL DATA (BSMW0002)

Initial Displacement: 1.162 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.6342 ft/day Le = 0.1 ft



BSMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW2-out2BR.aqt
Date: 02/12/09 Time: 14:28:24

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

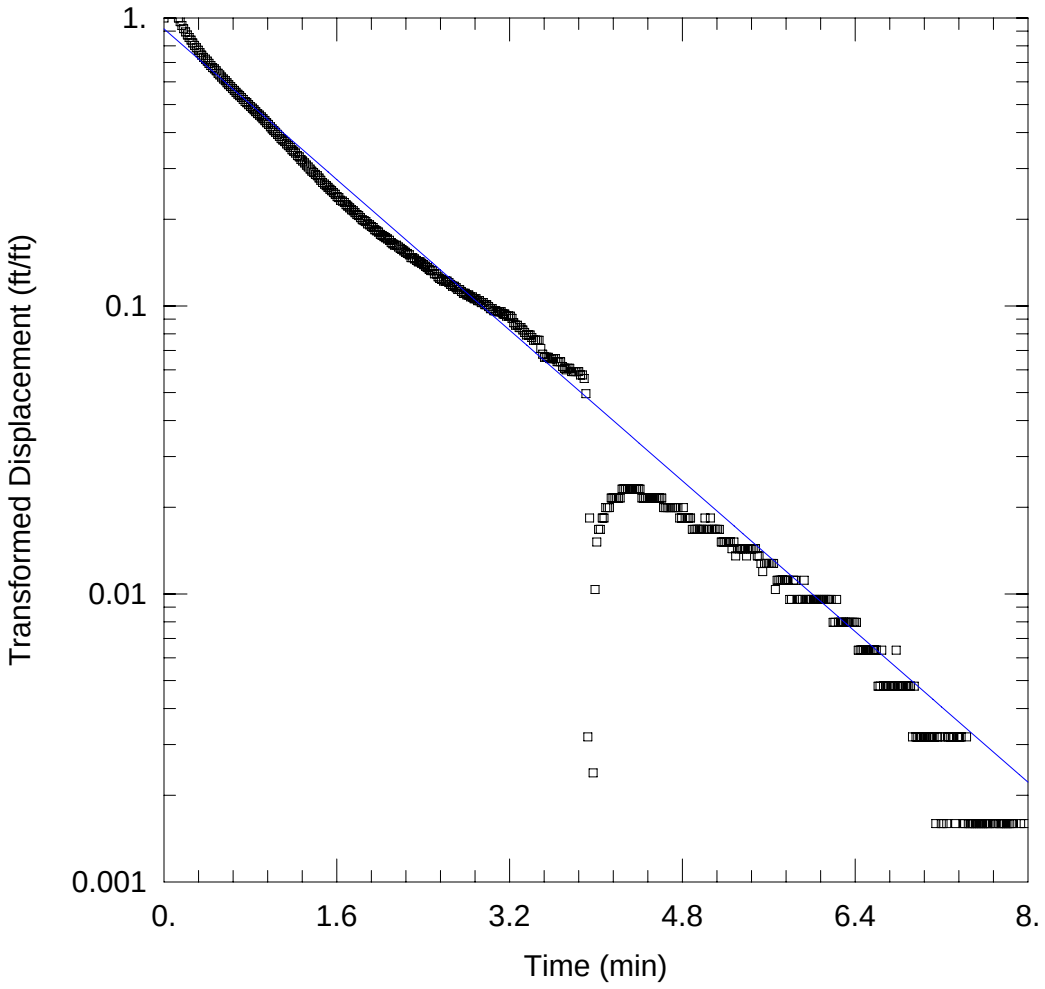
WELL DATA (BSMW0002)

Initial Displacement: 1.181 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.858 ft/day y0 = 1.131 ft



BSMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW2-out2DGN.aqt
Date: 02/12/09 Time: 14:28:55

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

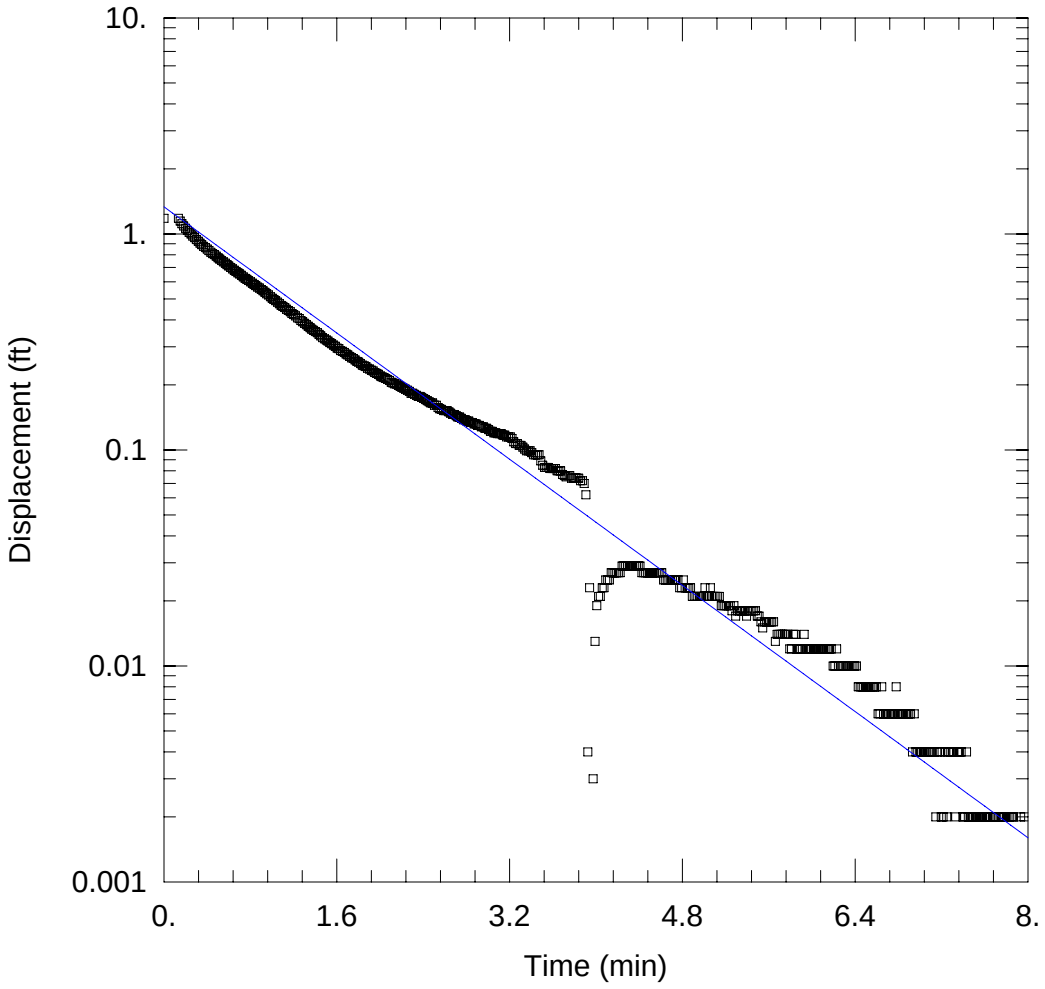
WELL DATA (BSMW0002)

Initial Displacement: 1.181 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 6.05 ft/day y0 = 1.088 ft



BSMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW2-out2HV.aqt
Date: 02/12/09 Time: 14:29:28

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

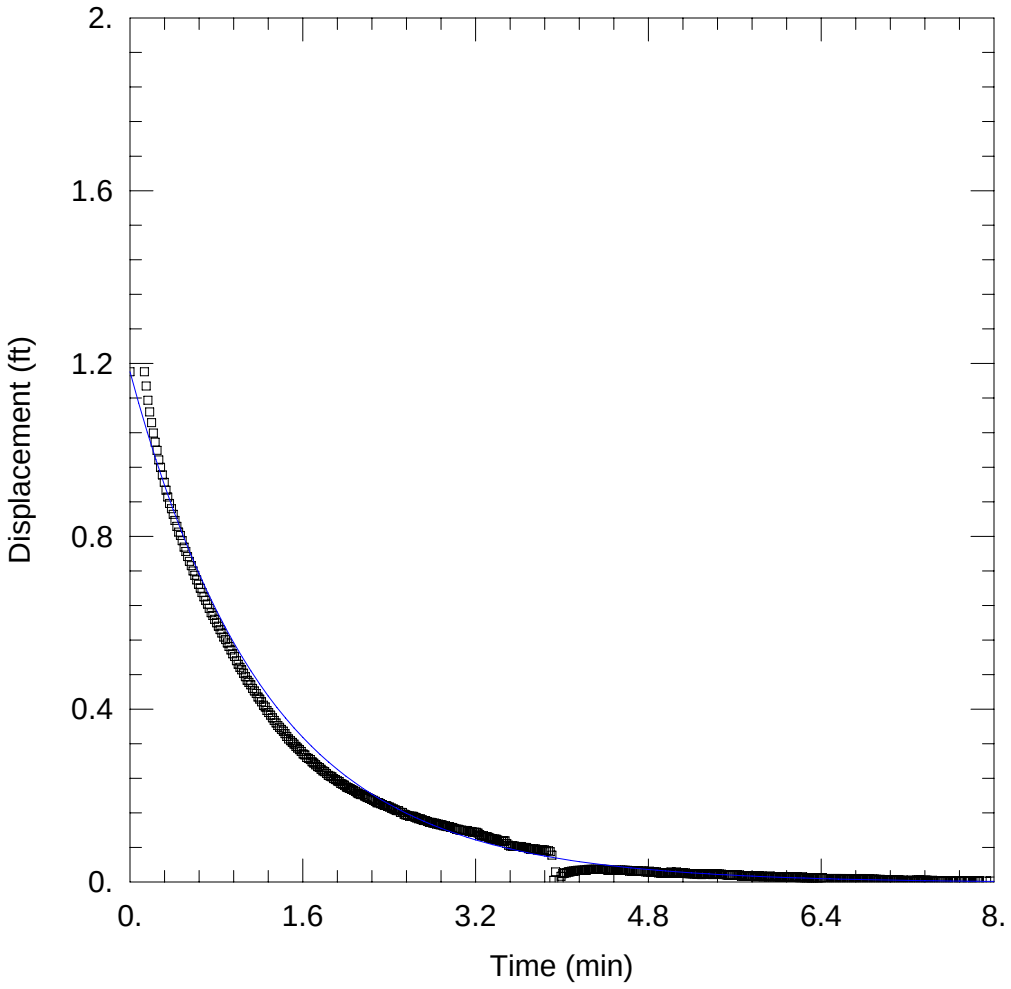
Saturated Thickness: 39.71 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0002)

Initial Displacement: 1.181 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 8.911 ft/day
y0 = 1.335 ft



BSMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW2-out2KGS.aqt
Date: 02/12/09 Time: 14:29:54

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft

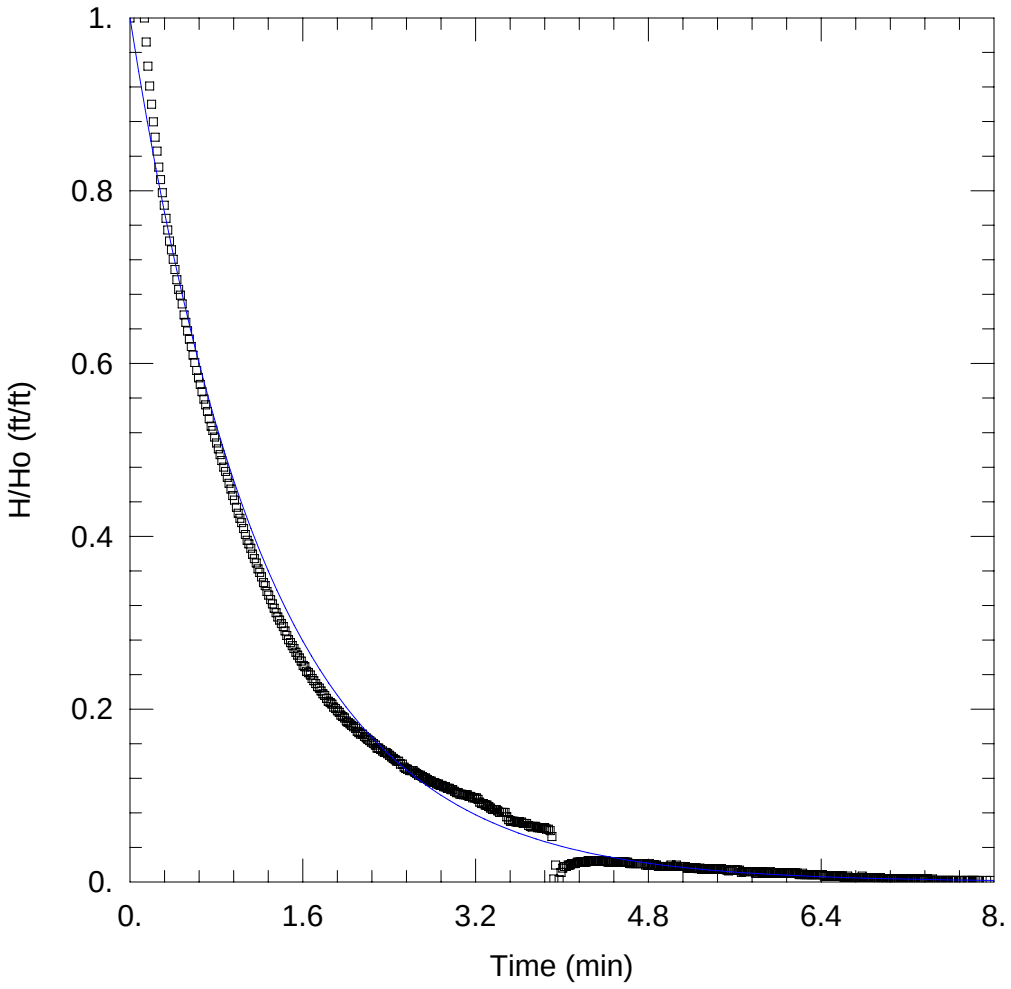
WELL DATA (BSMW0002)

Initial Displacement: 1.181 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.8775 ft/day
Kz/Kr = 1.
Ss = 8.149E-11 ft^{-1}



BSMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW2-out2SG.aqt
Date: 02/12/09 Time: 14:30:18

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0002
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.71 ft Anisotropy Ratio (Kz/Kr): 1.

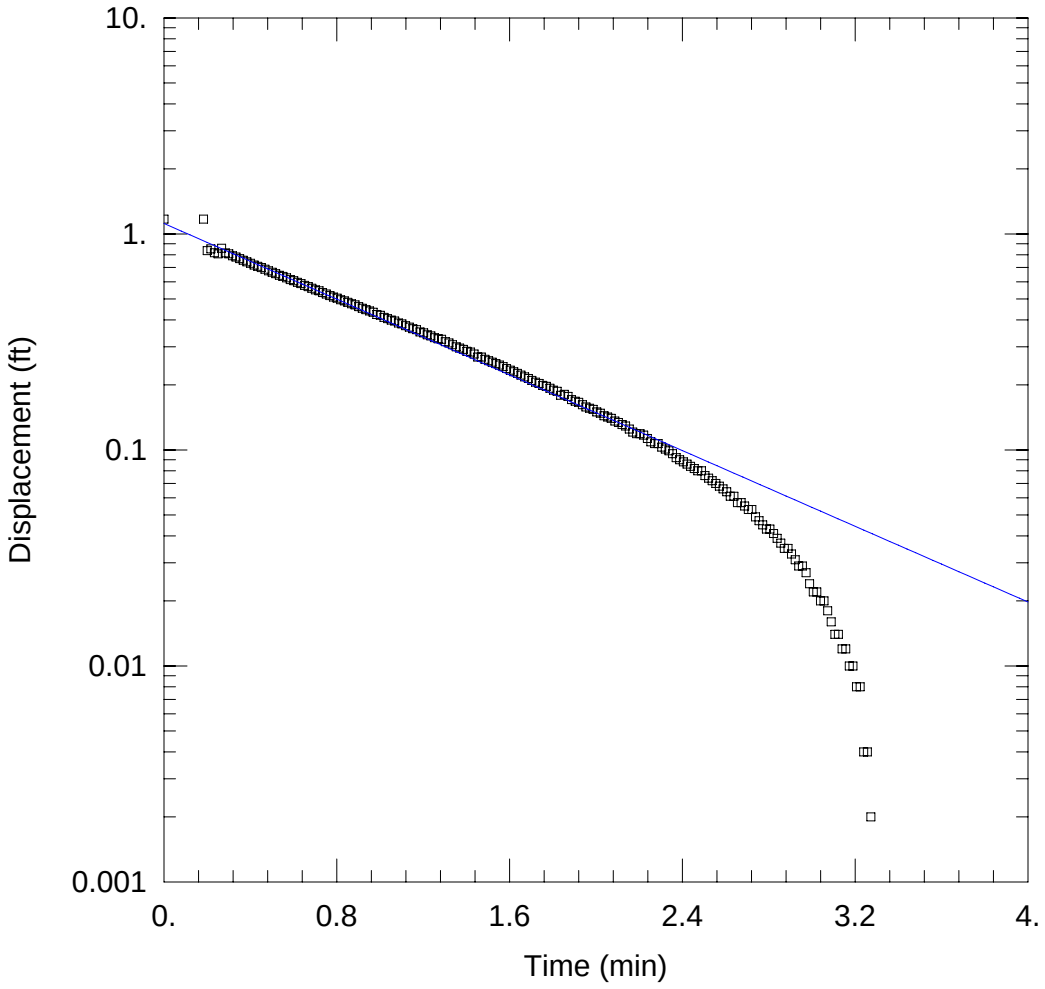
WELL DATA (BSMW0002)

Initial Displacement: 1.181 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.71 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.7663 ft/day Le = 1. ft



BSMW0003 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW3-in1BR.aqt
Date: 02/12/09 Time: 13:49:54

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

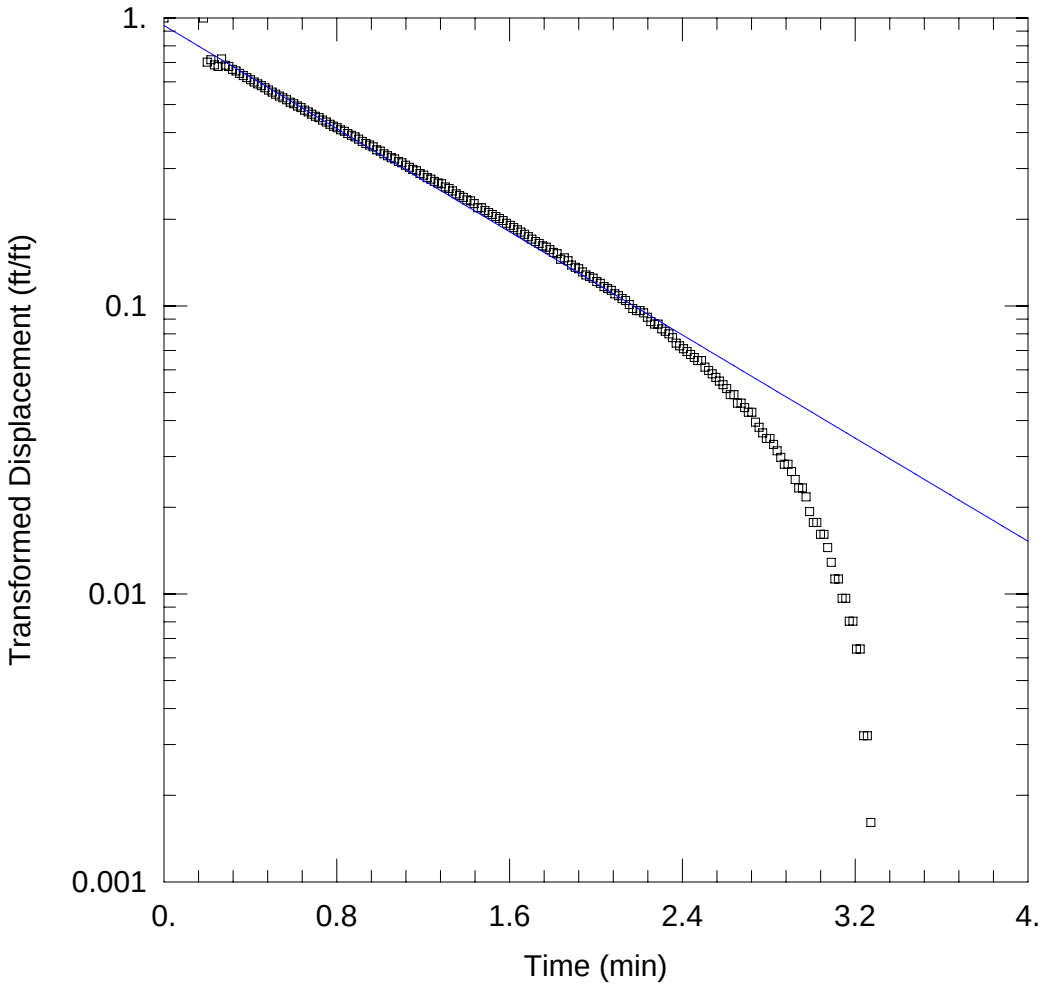
WELL DATA (BSMW0003)

Initial Displacement: 1.171 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.9747 ft/day y0 = 1.118 ft



BSMW0003 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW3-in1DGN.aqt
Date: 02/12/09 Time: 13:50:25

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

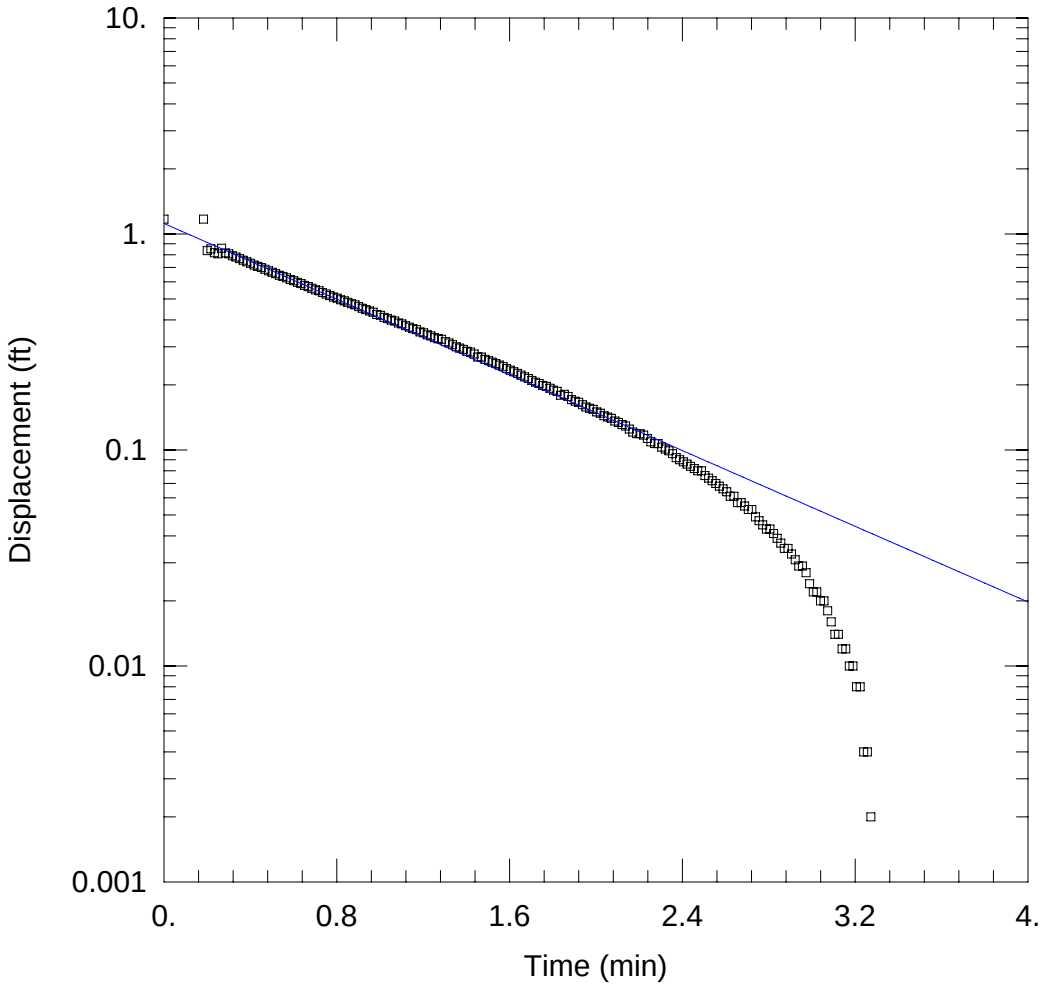
WELL DATA (BSMW0003)

Initial Displacement: 1.171 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 1.192 ft/day y0 = 1.106 ft



BSMW0003 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW3-in1HV.aqt
Date: 02/12/09 Time: 13:50:50

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

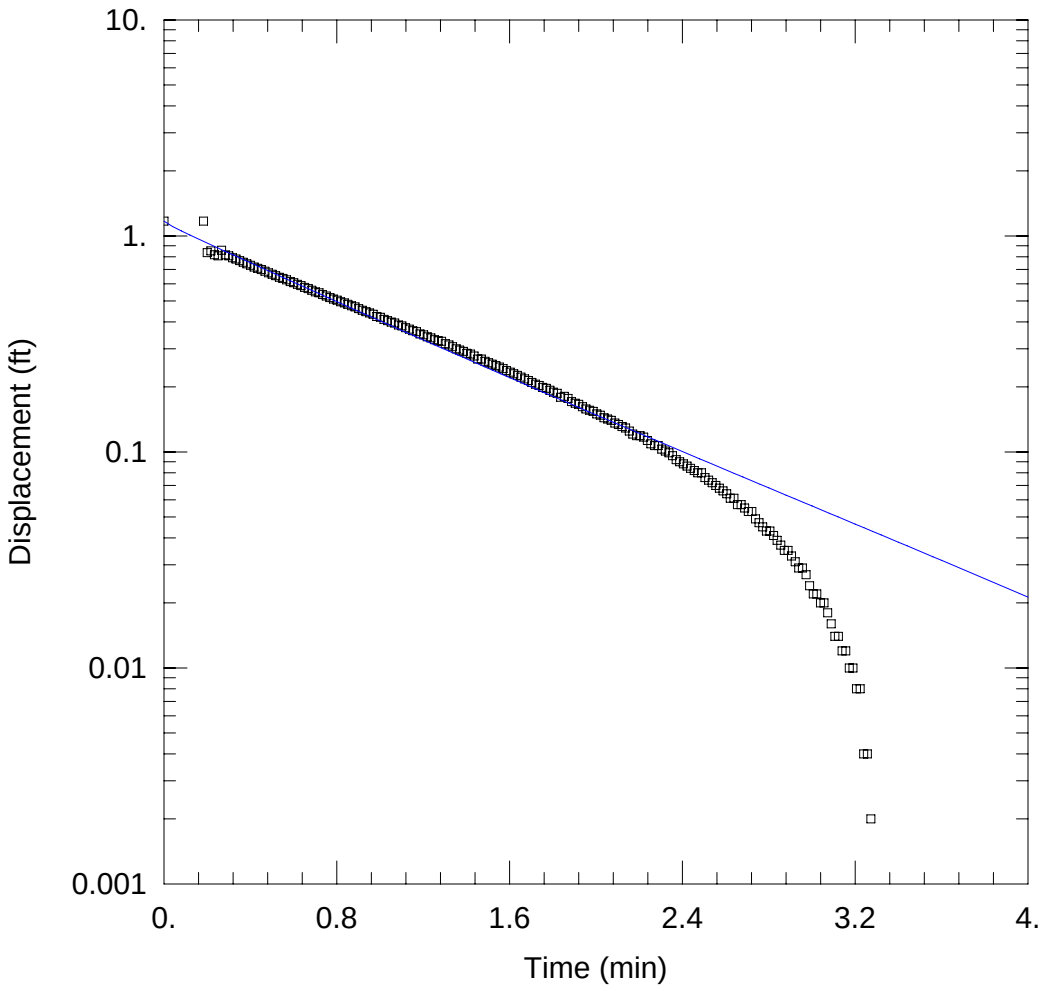
WELL DATA (BSMW0003)

Initial Displacement: 1.171 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.539 ft/day y0 = 1.118 ft



BSMW0003 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW3-in1KGS.aqt
Date: 02/12/09 Time: 13:51:17

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft

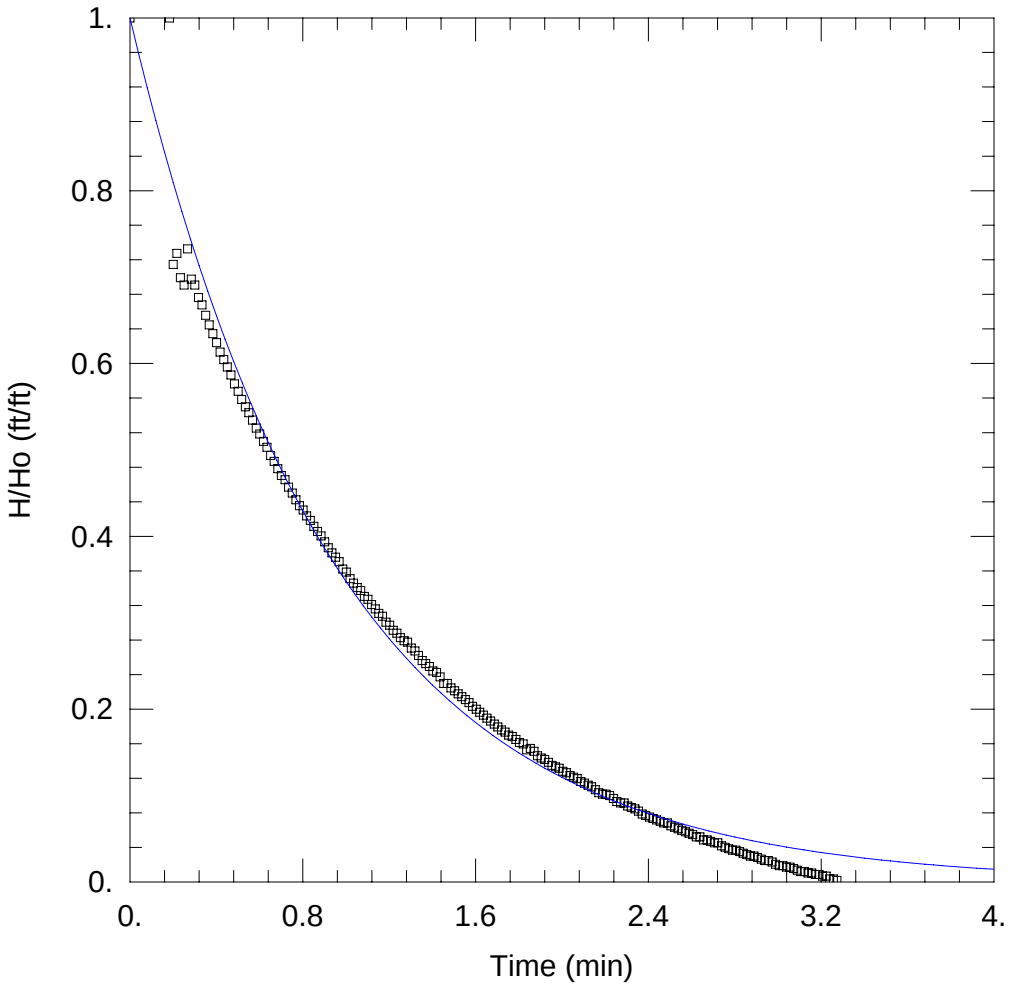
WELL DATA (BSMW0003)

Initial Displacement: 1.171 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 1.219 ft/day
Kz/Kr = 1.
Ss = 5.068E-6 ft^{-1}



BSMW0003 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW3-in1SG.aqt
Date: 02/12/09 Time: 13:51:48

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

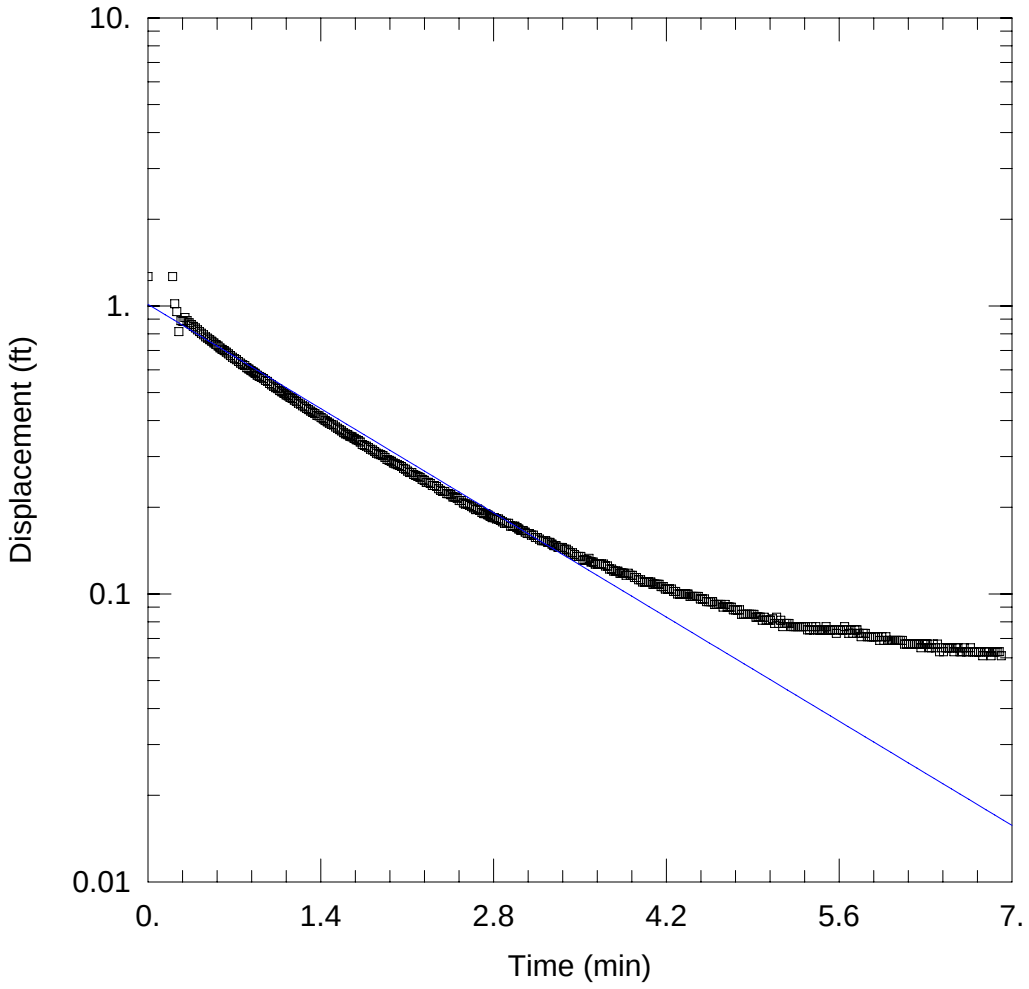
WELL DATA (BSMW0003)

Initial Displacement: 1.171 ft Static Water Column Height: 10.43 ft
Total Well Penetration Depth: 10.43 ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 1.02 ft/day Le = 0.1 ft



BSMW0003 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW3-in2BR.aqt
Date: 02/12/09 Time: 13:52:14

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

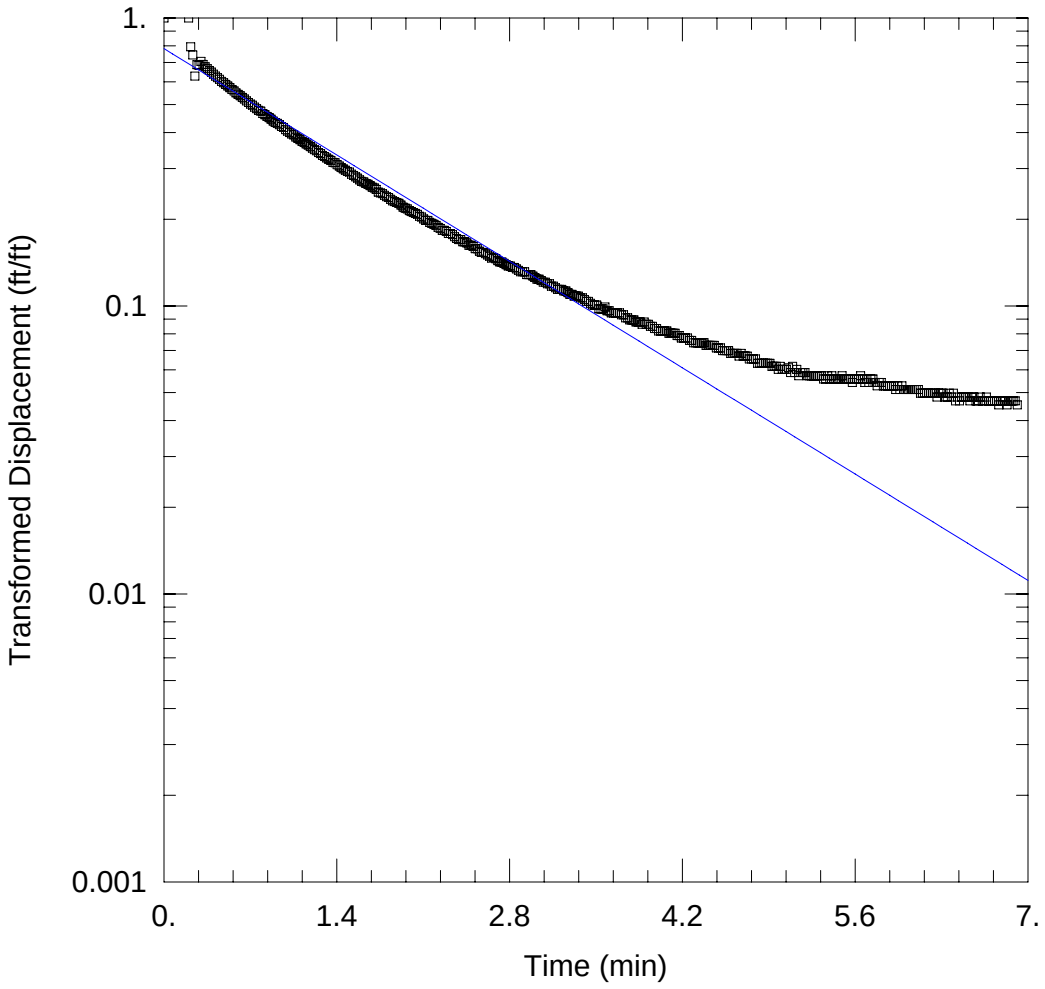
WELL DATA (BSMW0003)

Initial Displacement: 1.265 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.575 ft/day
y0 = 1.012 ft



BSMW0003 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW3-in2DGN.aqt
Date: 02/12/09 Time: 13:52:40

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

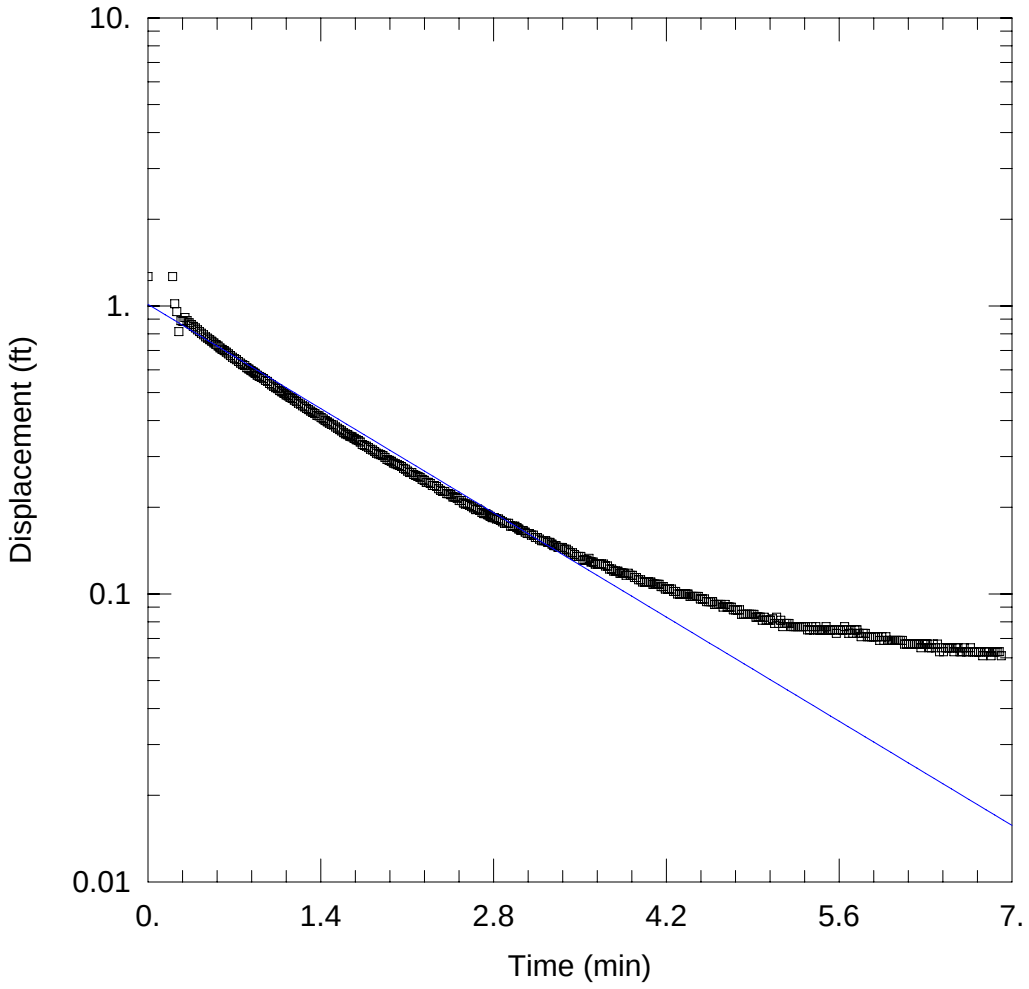
WELL DATA (BSMW0003)

Initial Displacement: 1.265 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 0.7024 ft/day y0 = 1.004 ft



BSMW0003 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW3-in2HV.aqt
Date: 02/12/09 Time: 13:53:46

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

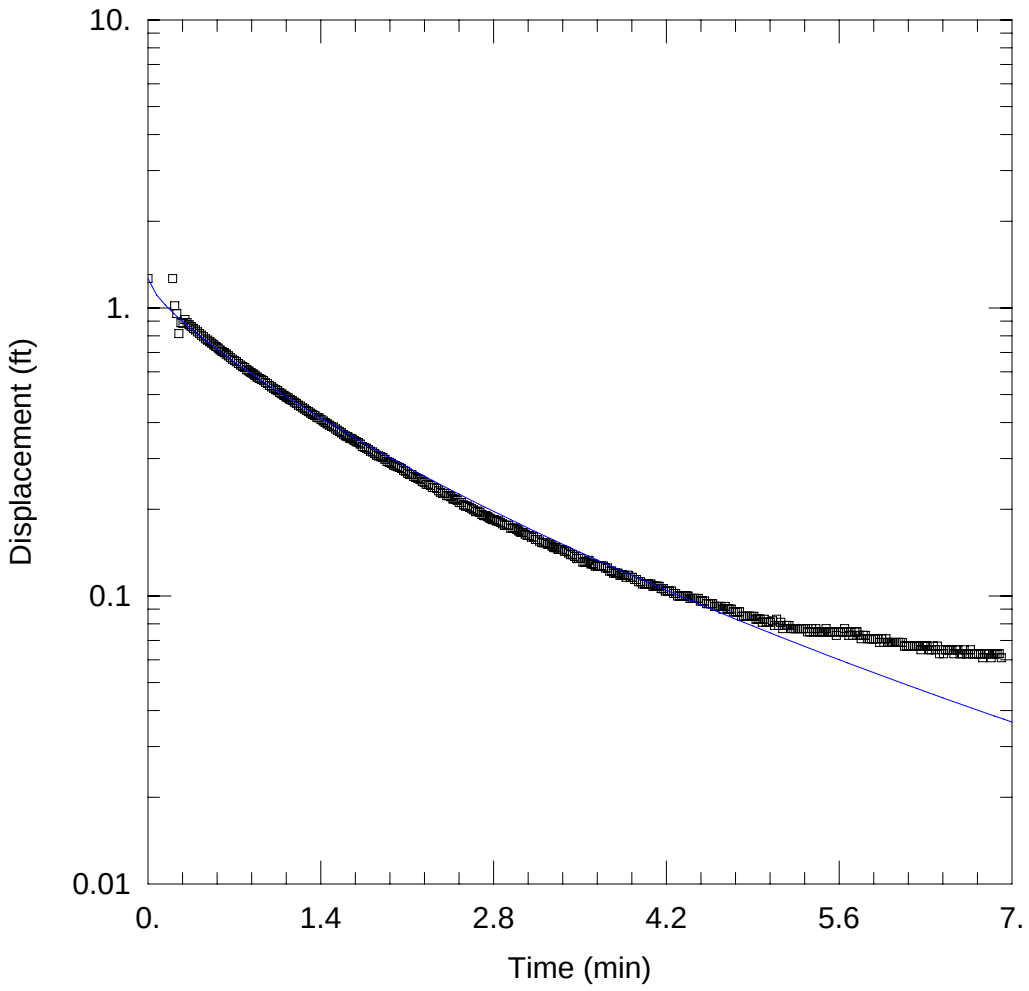
WELL DATA (BSMW0003)

Initial Displacement: 1.265 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.9082 ft/day y0 = 1.013 ft



BSMW0003 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW3-in2KGS.aqt
Date: 02/12/09 Time: 13:54:21

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft

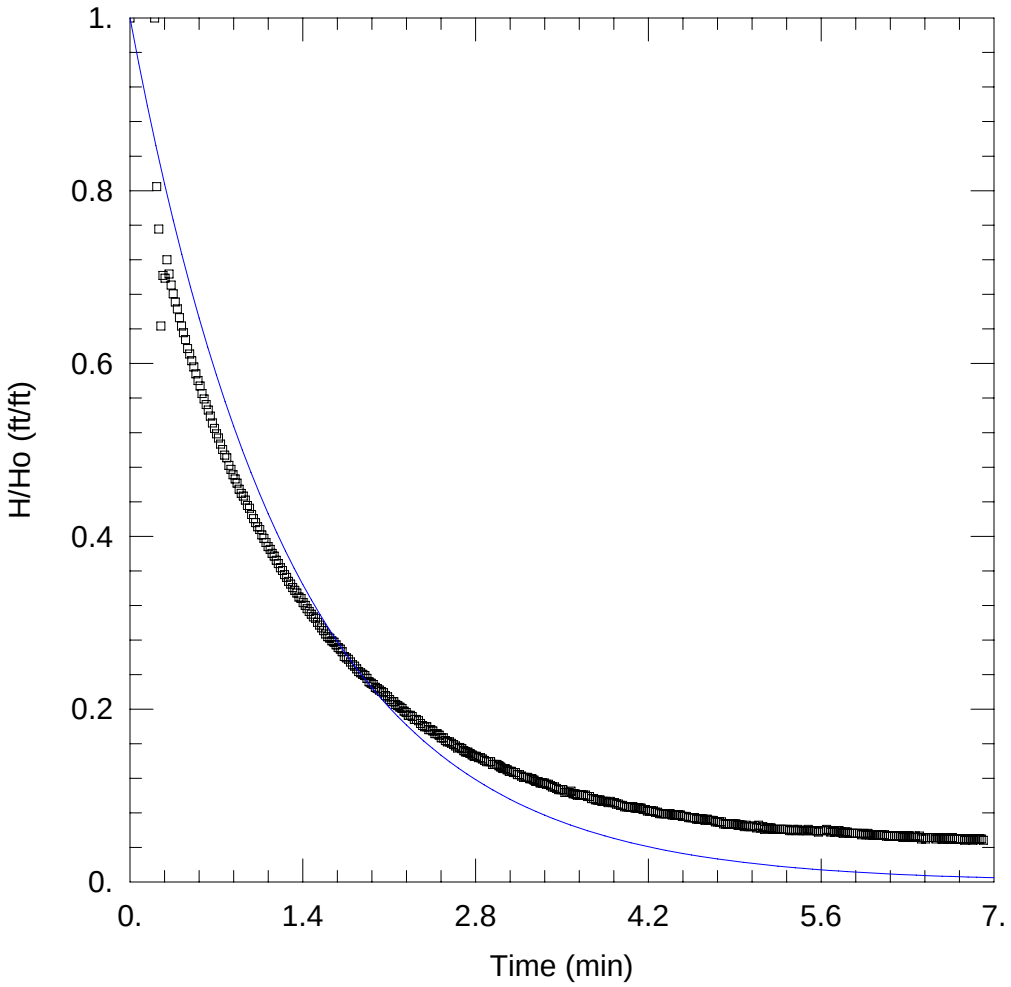
WELL DATA (BSMW0003)

Initial Displacement: 1.265 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.7678 ft/day
Kz/Kr = 1.
Ss = 0.0001126 ft^{-1}



BSMW0003 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW3-in2SG.aqt
Date: 02/12/09 Time: 13:54:49

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

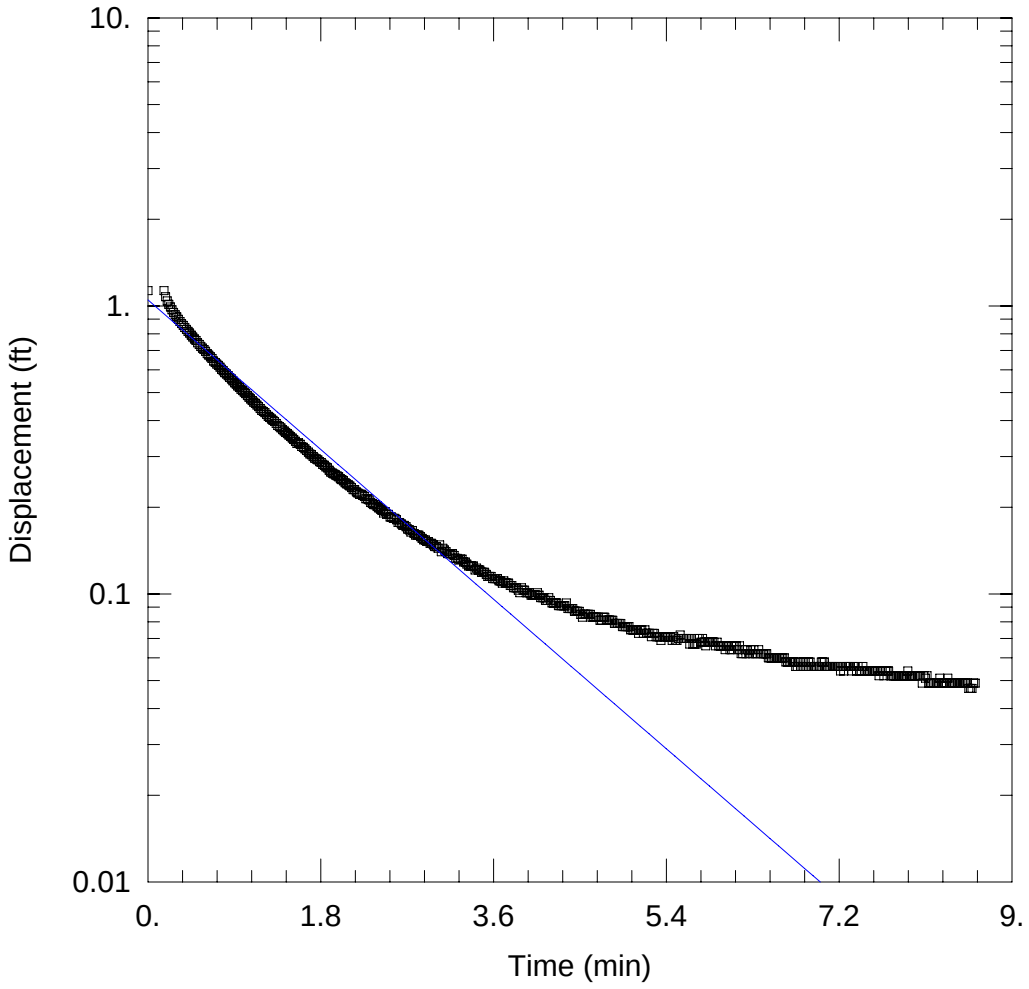
Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0003)

Initial Displacement: 1.265 ft Static Water Column Height: 10.43 ft
Total Well Penetration Depth: 10.43 ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar
K = 0.7361 ft/day Le = 0.1 ft



BSMW0003 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW3-out1BR.aqt
Date: 02/12/09 Time: 14:30:43

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

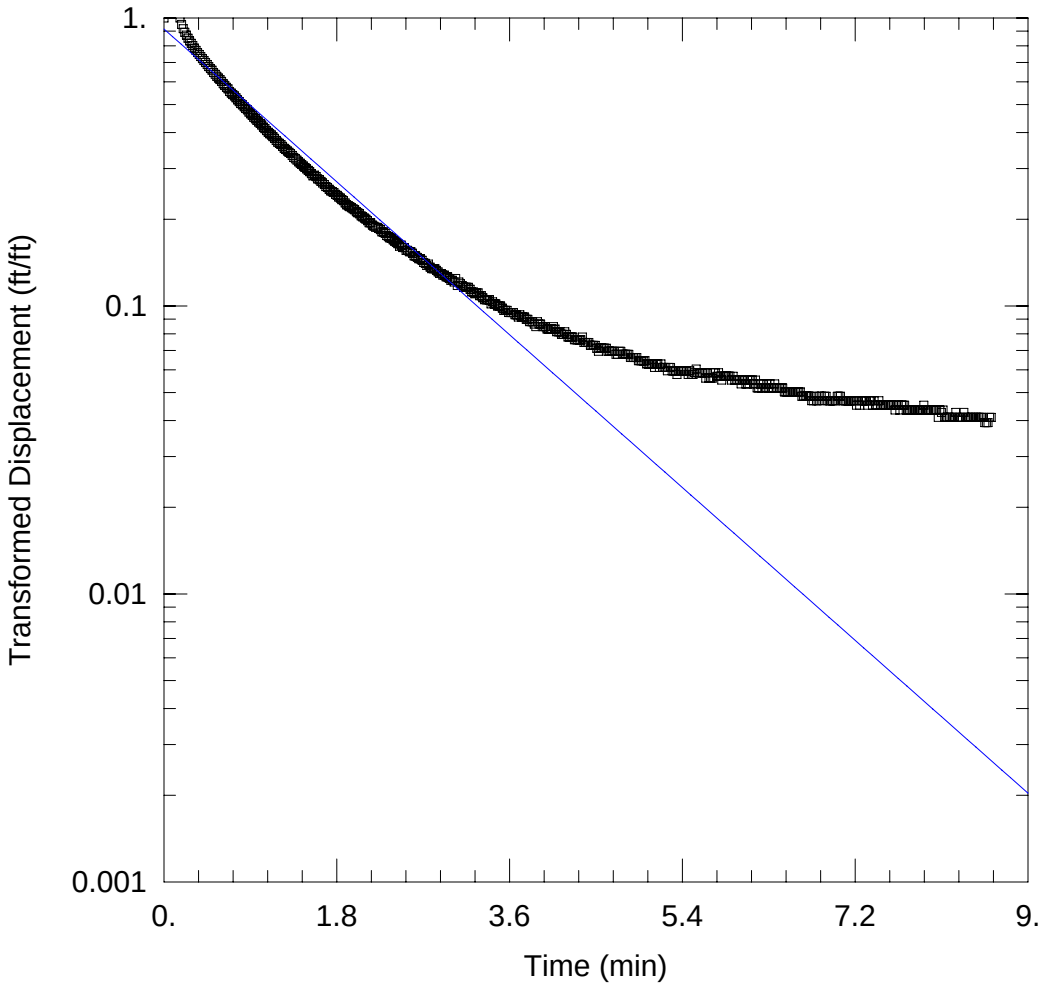
Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0003)

Initial Displacement: 1.13 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6418 ft/day
y0 = 1.048 ft



BSMW0003 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW3-out1DGN.aqt
Date: 02/12/09 Time: 14:31:07

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

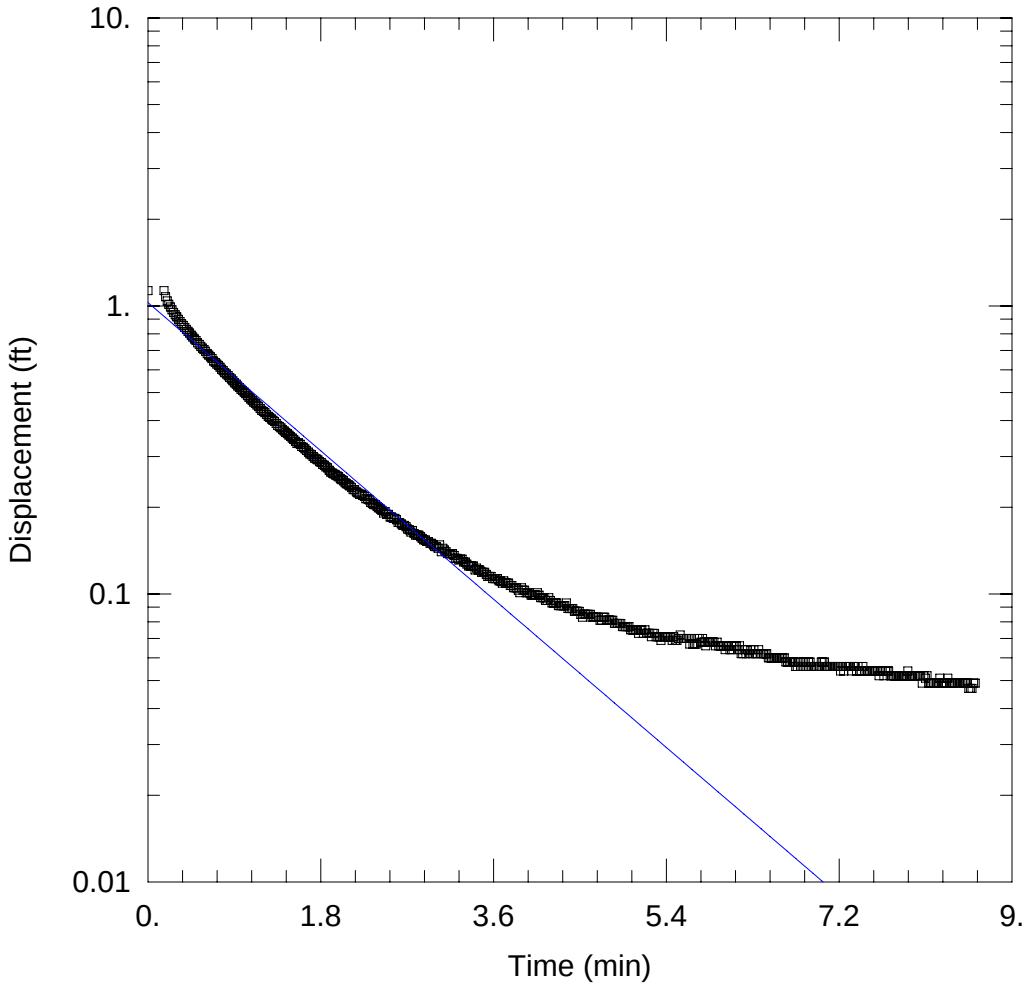
WELL DATA (BSMW0003)

Initial Displacement: 1.13 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Dagan

K = 0.7848 ft/day
y0 = 1.039 ft



BSMW0003 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW3-out1HV.aqt
Date: 02/12/09 Time: 14:31:34

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

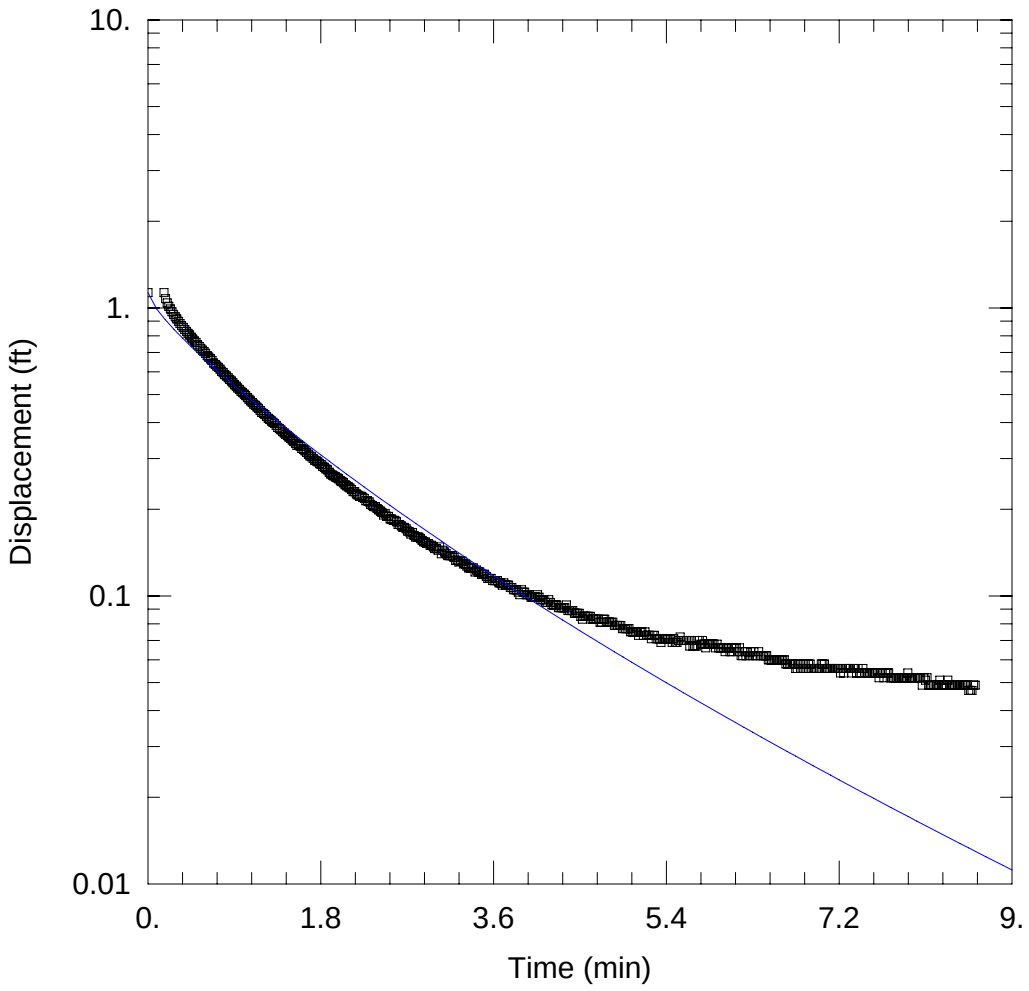
Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0003)

Initial Displacement: 1.13 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 1.005 ft/day
y0 = 1.027 ft



BSMW0003 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW3-out1KGS.aqt
Date: 02/12/09 Time: 14:32:37

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft

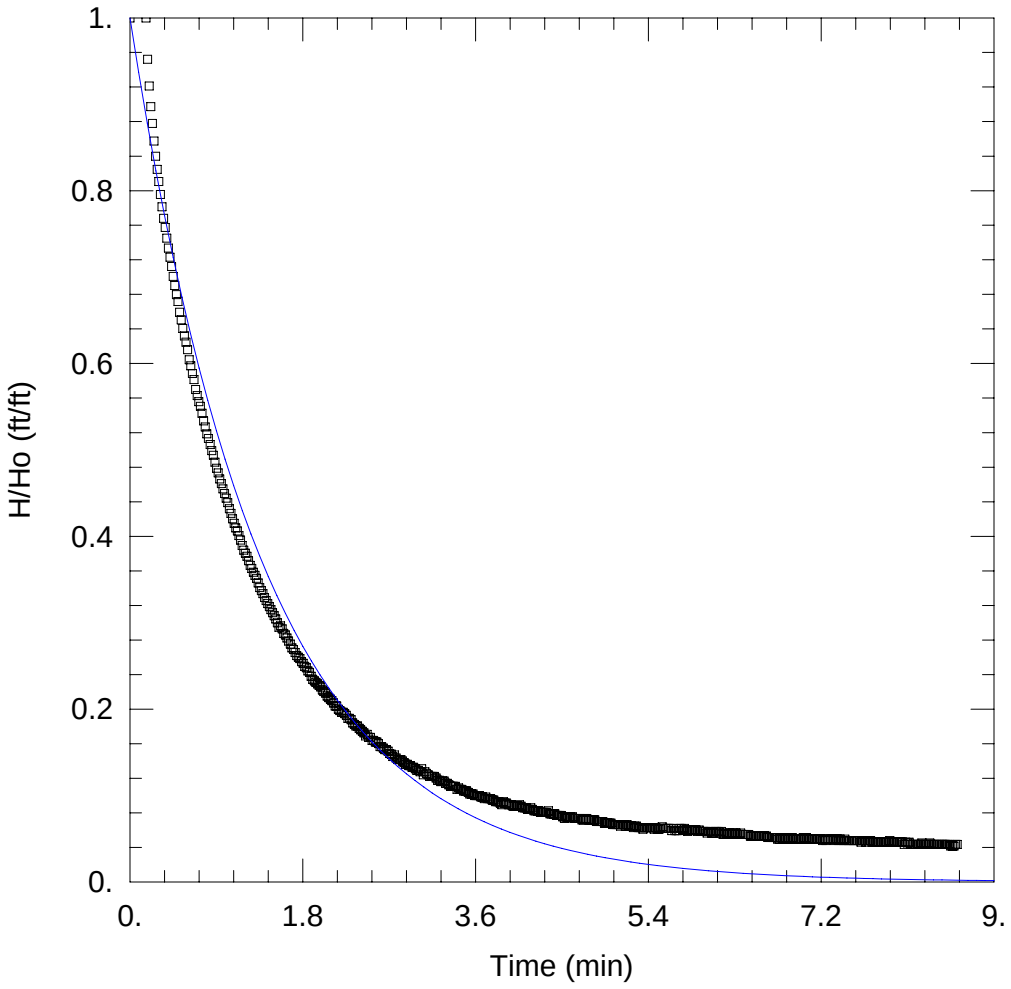
WELL DATA (BSMW0003)

Initial Displacement: 1.13 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.7802 ft/day
Kz/Kr = 1.
Ss = 5.729E-5 ft^{-1}



BSMW0003 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW3-out1SG.aqt
Date: 02/12/09 Time: 14:33:02

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0003
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

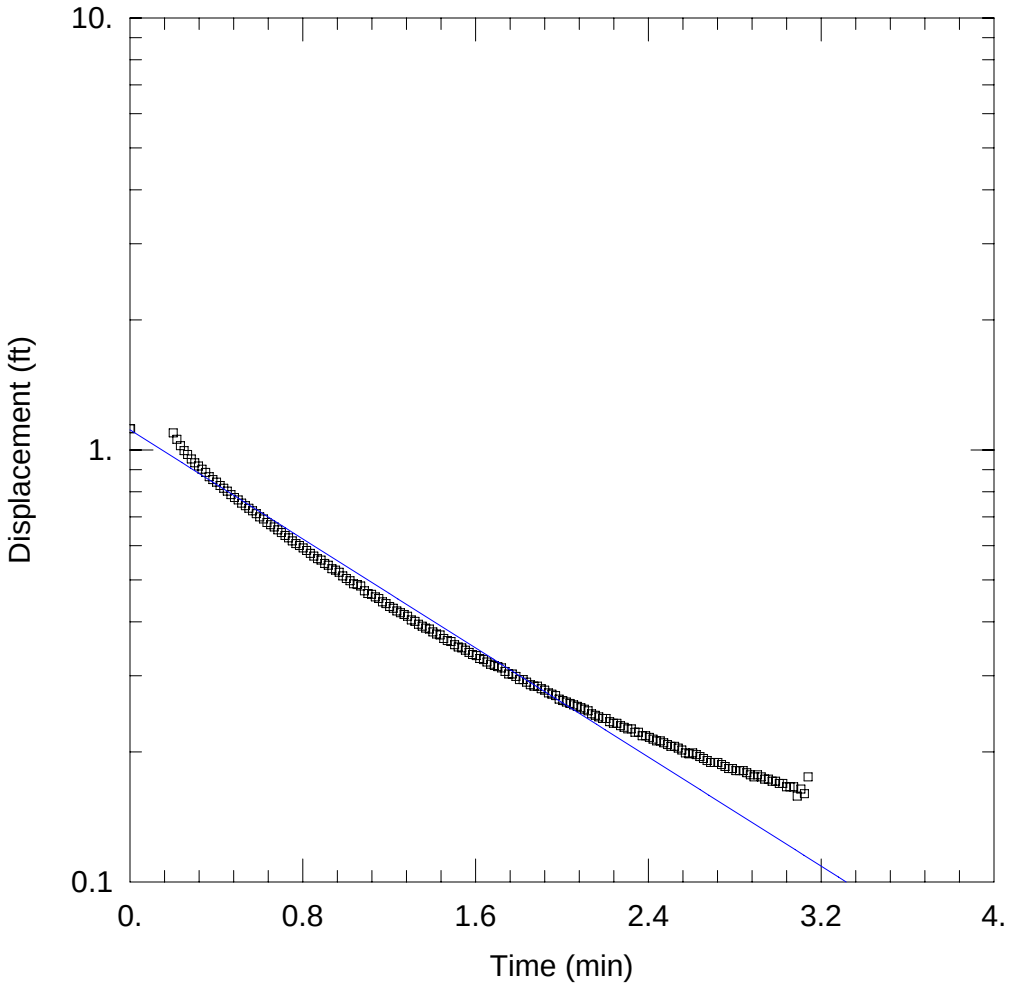
WELL DATA (BSMW0003)

Initial Displacement: 1.13 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.6973 ft/day Le = 0.1 ft



BSMW0003 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW3-out2BR.aqt
Date: 02/12/09 Time: 14:33:39

PROJECT INFORMATION

Company: Weston Solutions, Inc.

AQUIFER DATA

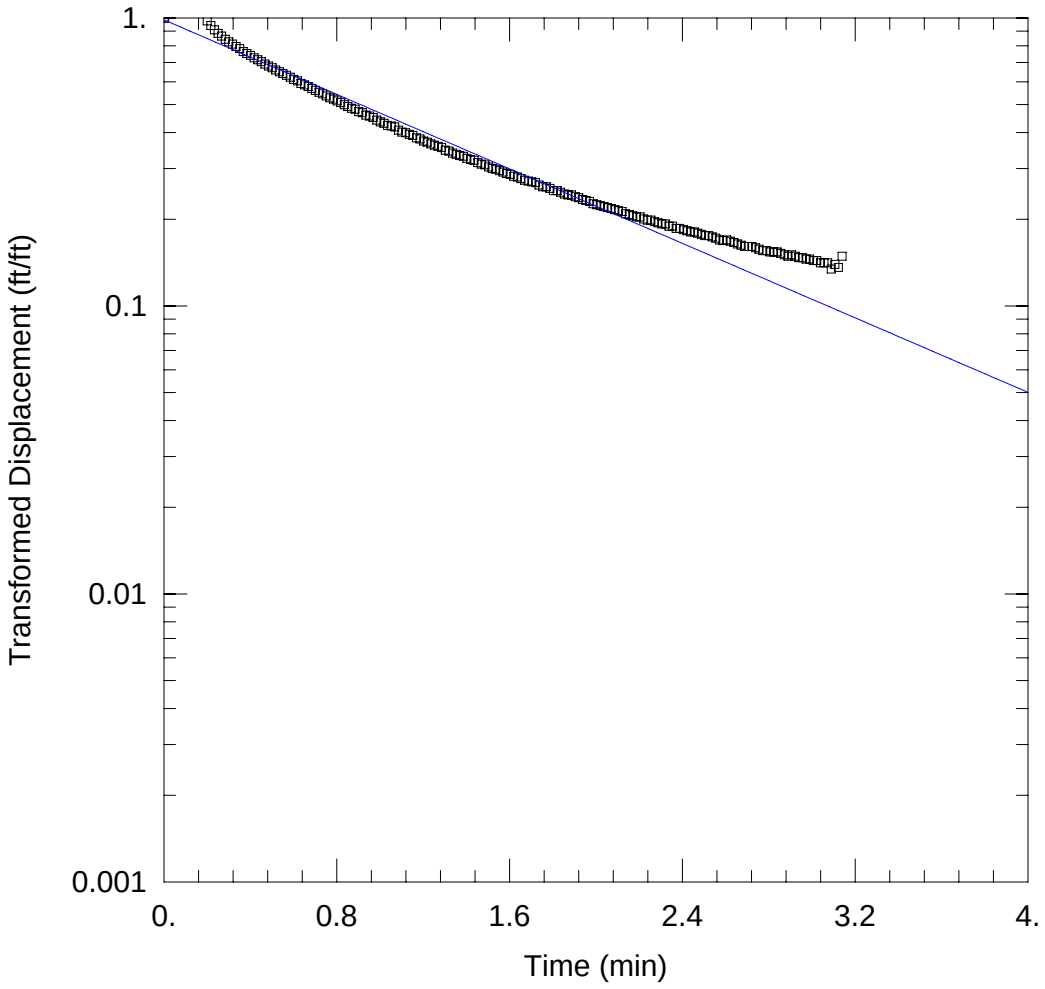
Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0003)

Initial Displacement: 1.12 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
K = 0.7021 ft/day
Solution Method: Bouwer-Rice
y0 = 1.113 ft



BSMW0003 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW3-out2DGN.aqt
Date: 02/12/09 Time: 14:34:10

PROJECT INFORMATION

Company: Weston Solutions, Inc.

AQUIFER DATA

Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

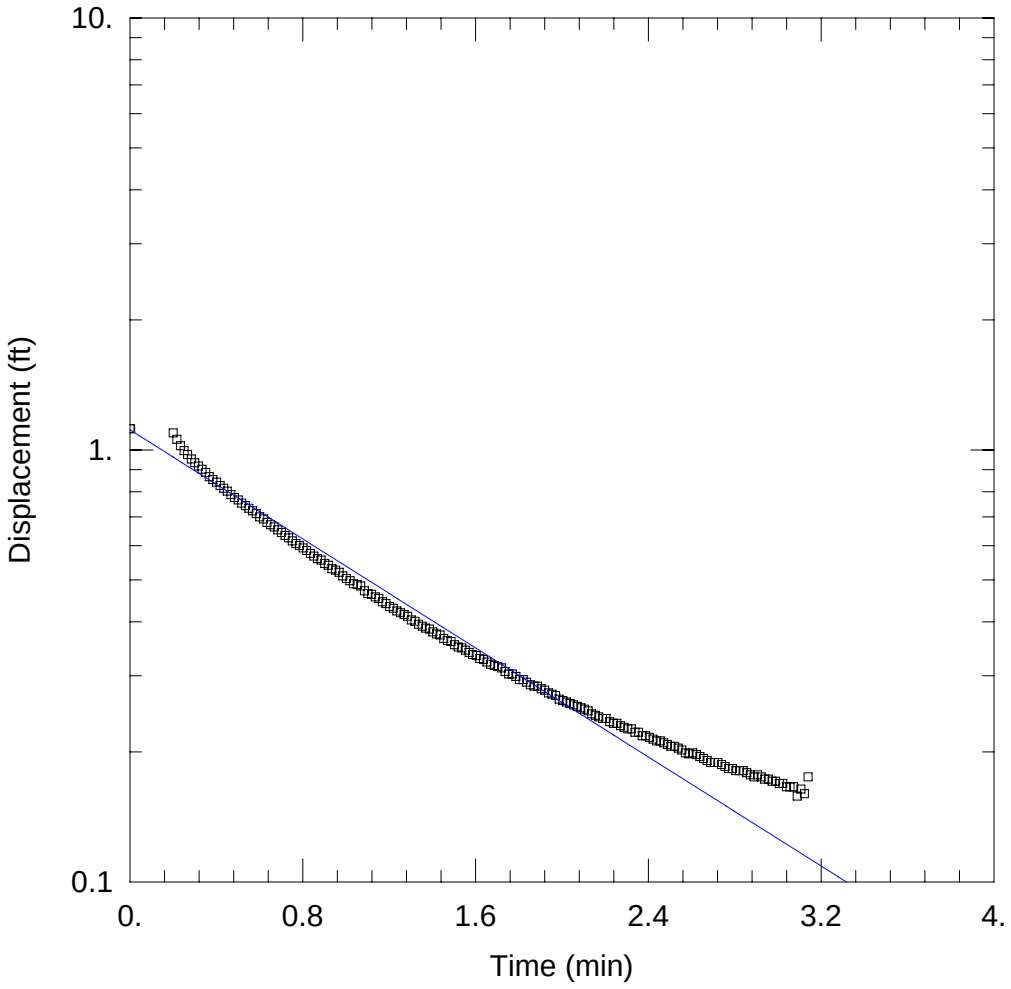
WELL DATA (BSMW0003)

Initial Displacement: 1.12 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Dagan

K = 0.8609 ft/day
y0 = 1.103 ft



BSMW0003 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW3-out2HV.aqt
Date: 02/12/09 Time: 14:34:45

PROJECT INFORMATION

Company: Weston Solutions, Inc.

AQUIFER DATA

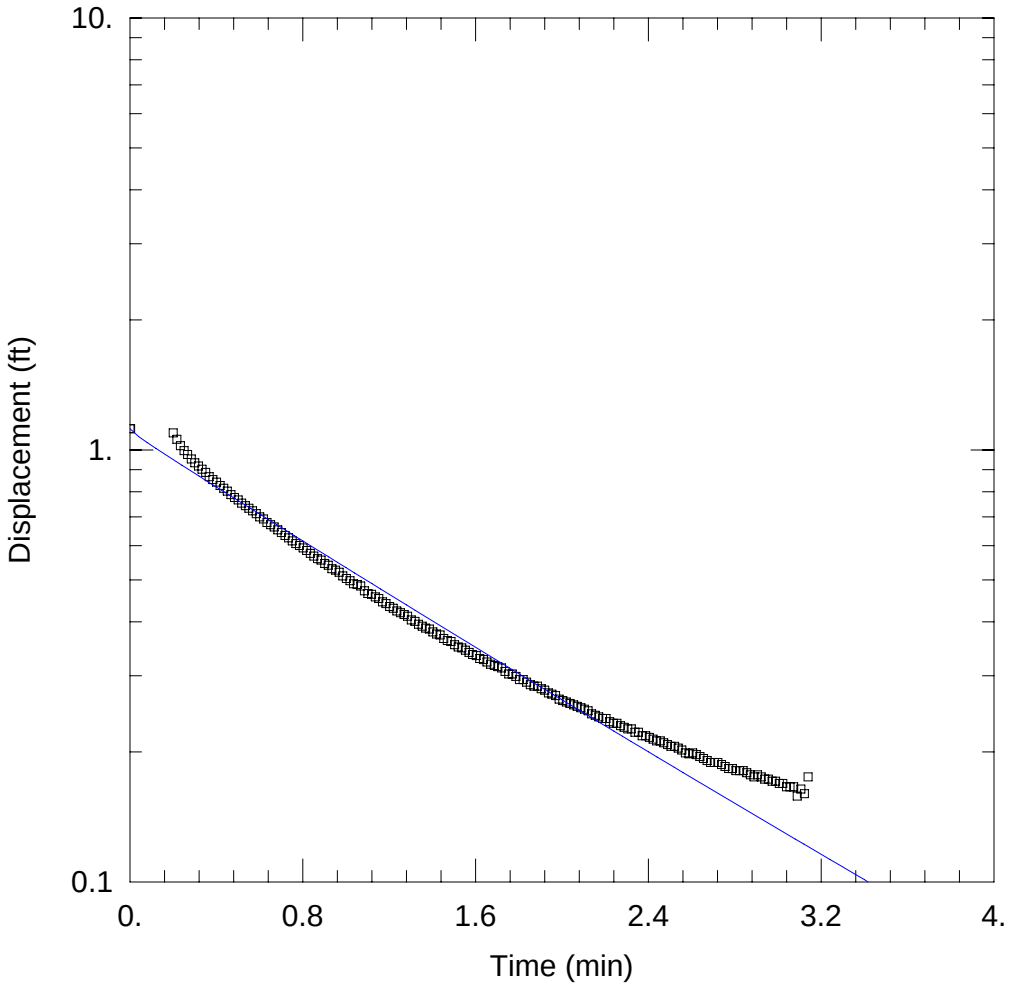
Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0003)

Initial Displacement: 1.12 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 1.109 ft/day
y0 = 1.113 ft



BSMW0003 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW3-out2KGS.aqt
Date: 02/12/09 Time: 14:35:21

PROJECT INFORMATION

Company: Weston Solutions, Inc.

AQUIFER DATA

Saturated Thickness: 42.43 ft

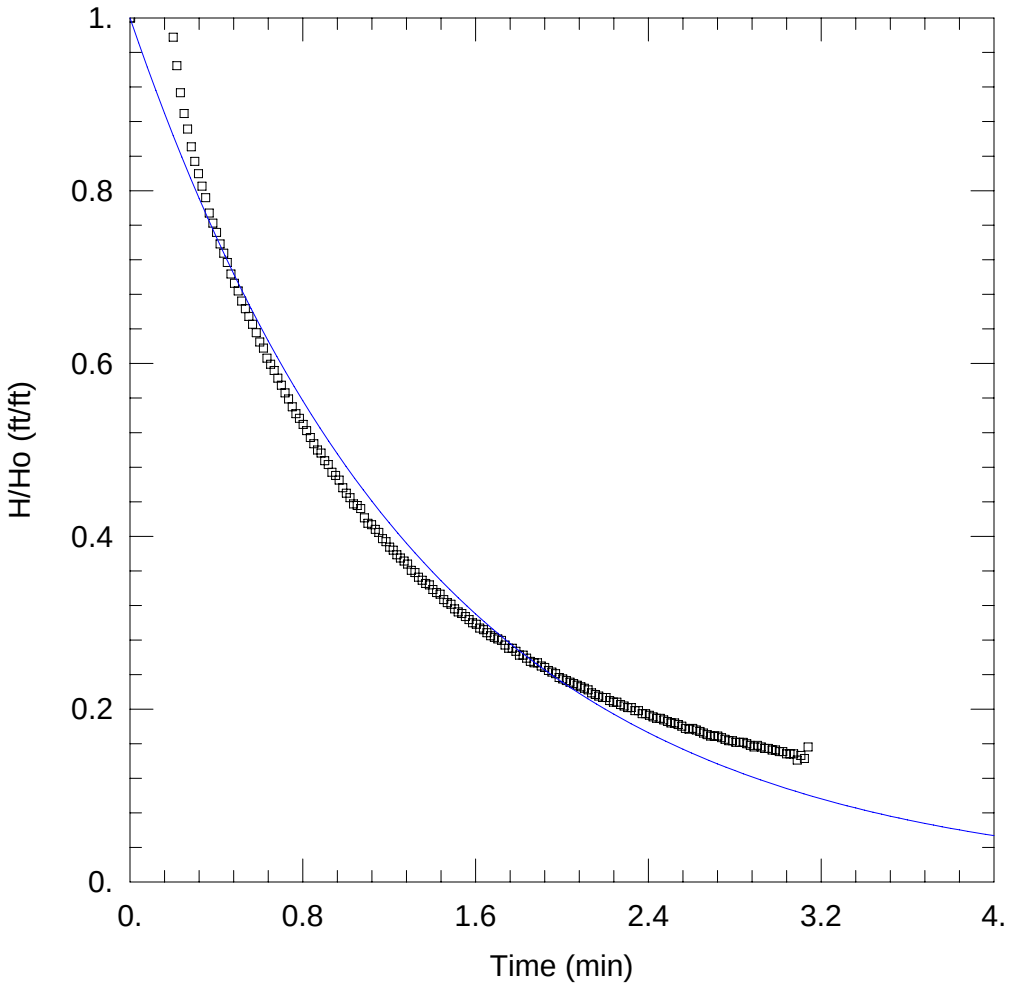
WELL DATA (BSMW0003)

Initial Displacement: 1.12 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.8398 ft/day
Kz/Kr = 1.
Ss = 4.378E-6 ft^{-1}



BSMW0003 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW3-out2SG.aqt
Date: 02/12/09 Time: 14:35:46

PROJECT INFORMATION

Company: Weston Solutions, Inc.

AQUIFER DATA

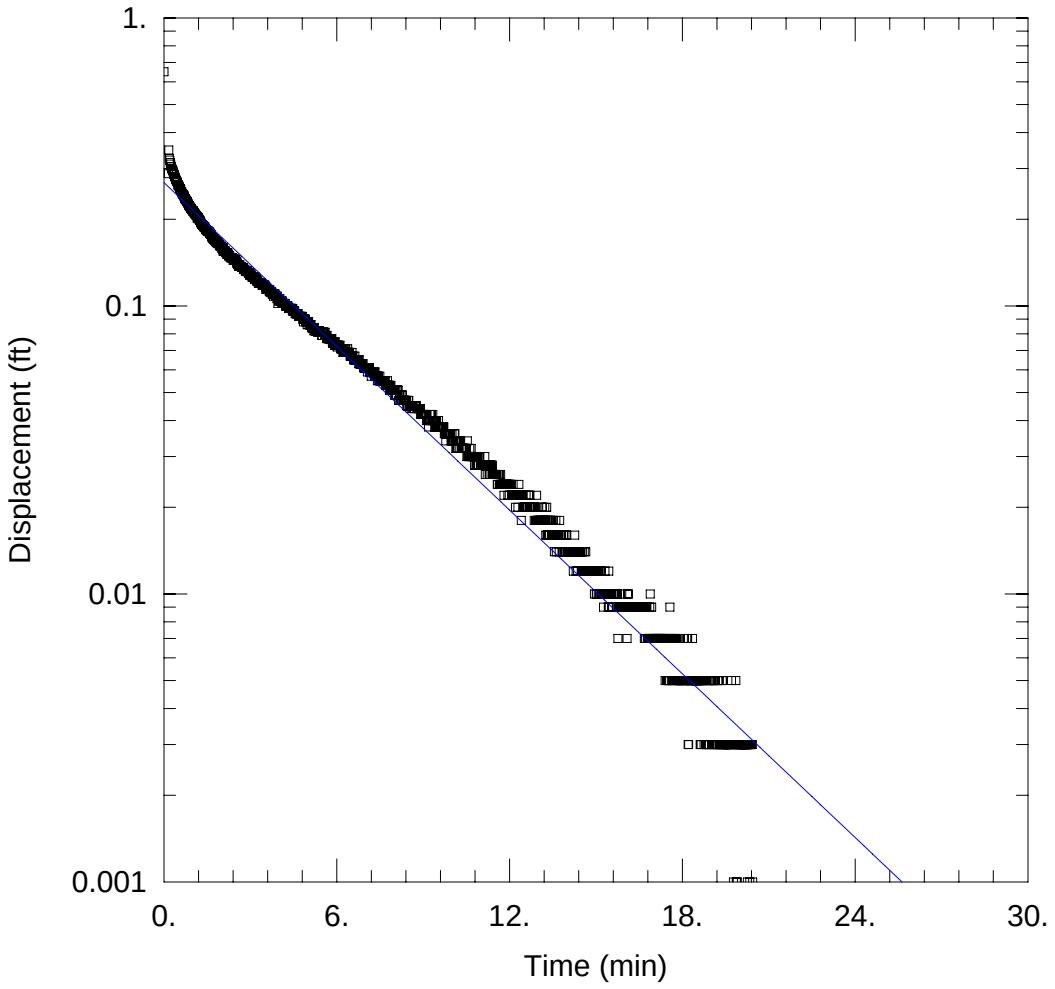
Saturated Thickness: 42.43 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0003)

Initial Displacement: 1.12 ft
Total Well Penetration Depth: 10.43 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.43 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
K = 0.707 ft/day
Solution Method: Springer-Gelhar
Le = 0.1 ft



BSMW0004 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW4-in1BR.aqt
Date: 02/12/09 Time: 13:55:35

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

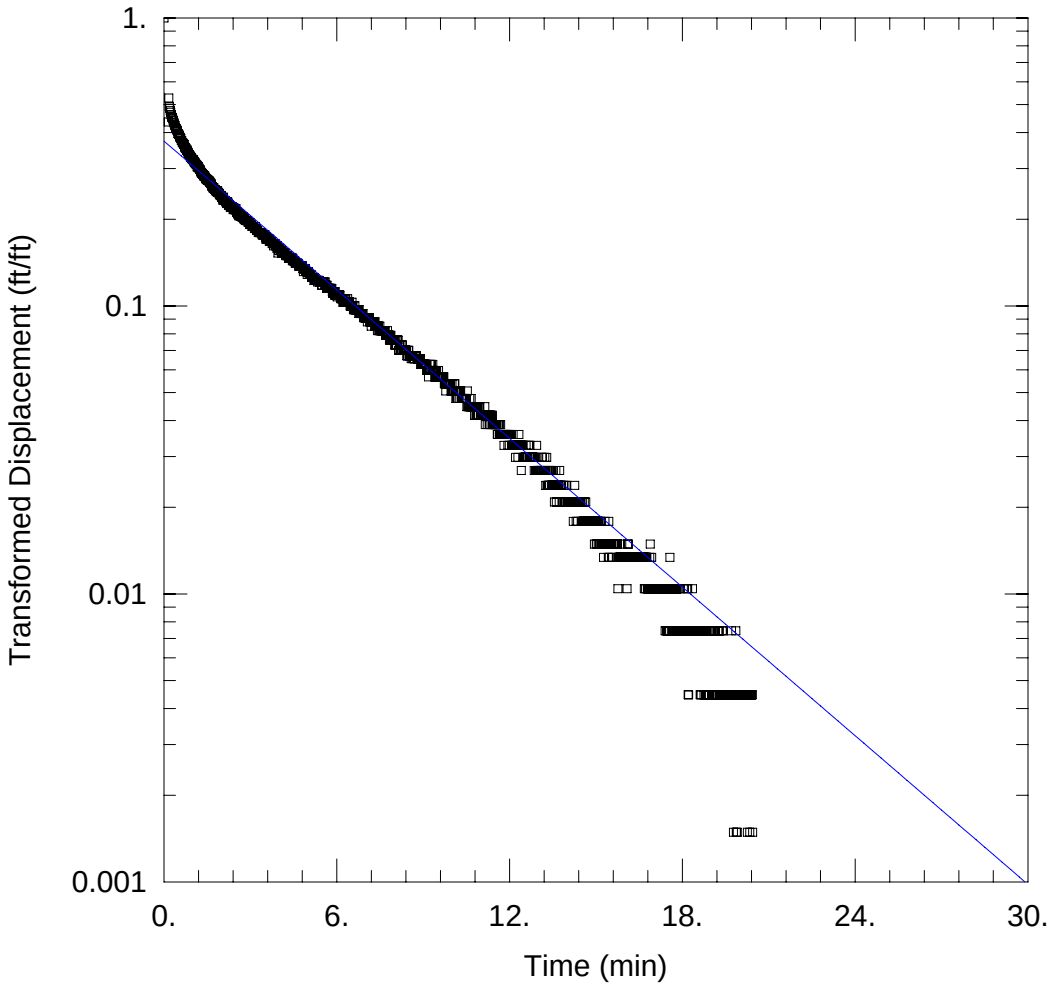
WELL DATA (BSMW0004)

Initial Displacement: 0.65 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.454 ft/day y0 = 0.268 ft



BSMW0004 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW4-in1DGN.aqt
Date: 02/12/09 Time: 13:56:00

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

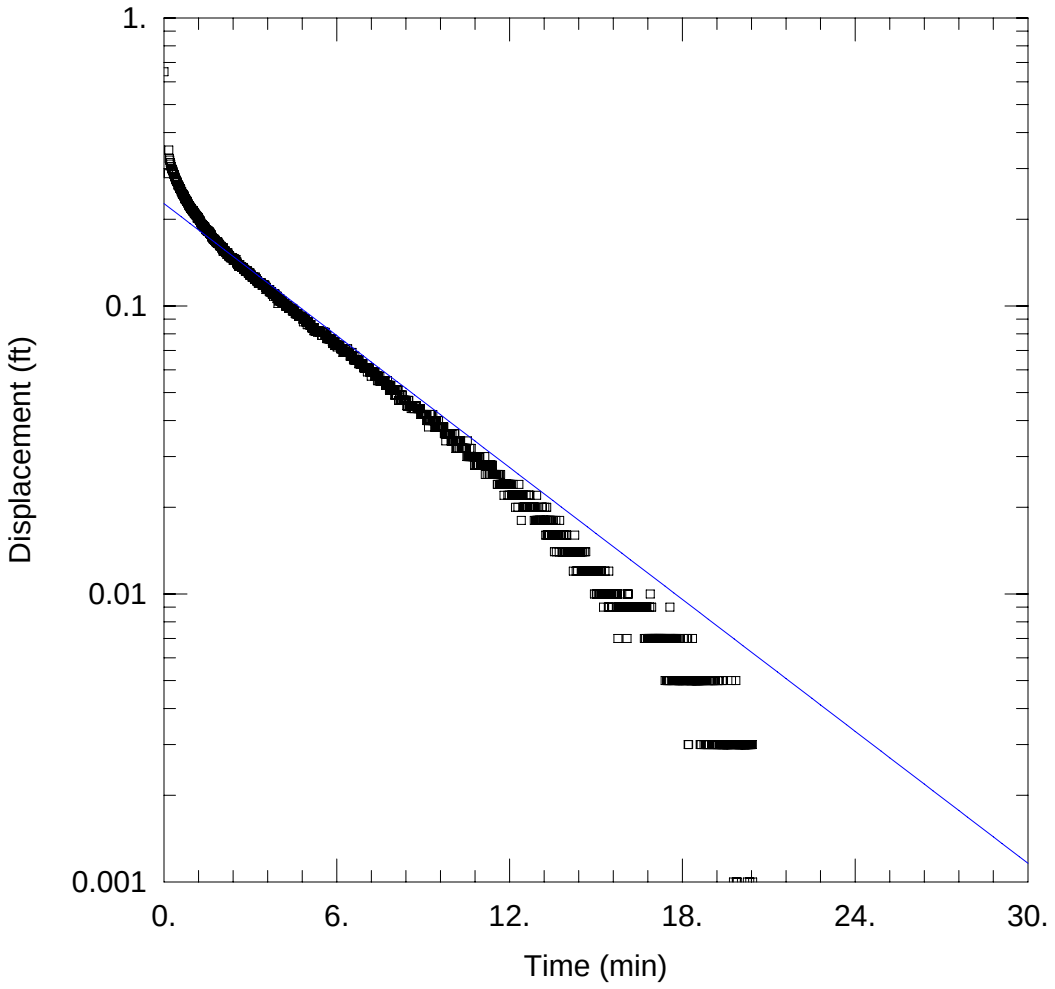
WELL DATA (BSMW0004)

Initial Displacement: 0.65 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 1.592 ft/day y0 = 0.2478 ft



BSMW0004 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW4-in1HV.aqt
Date: 02/12/09 Time: 13:56:23

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

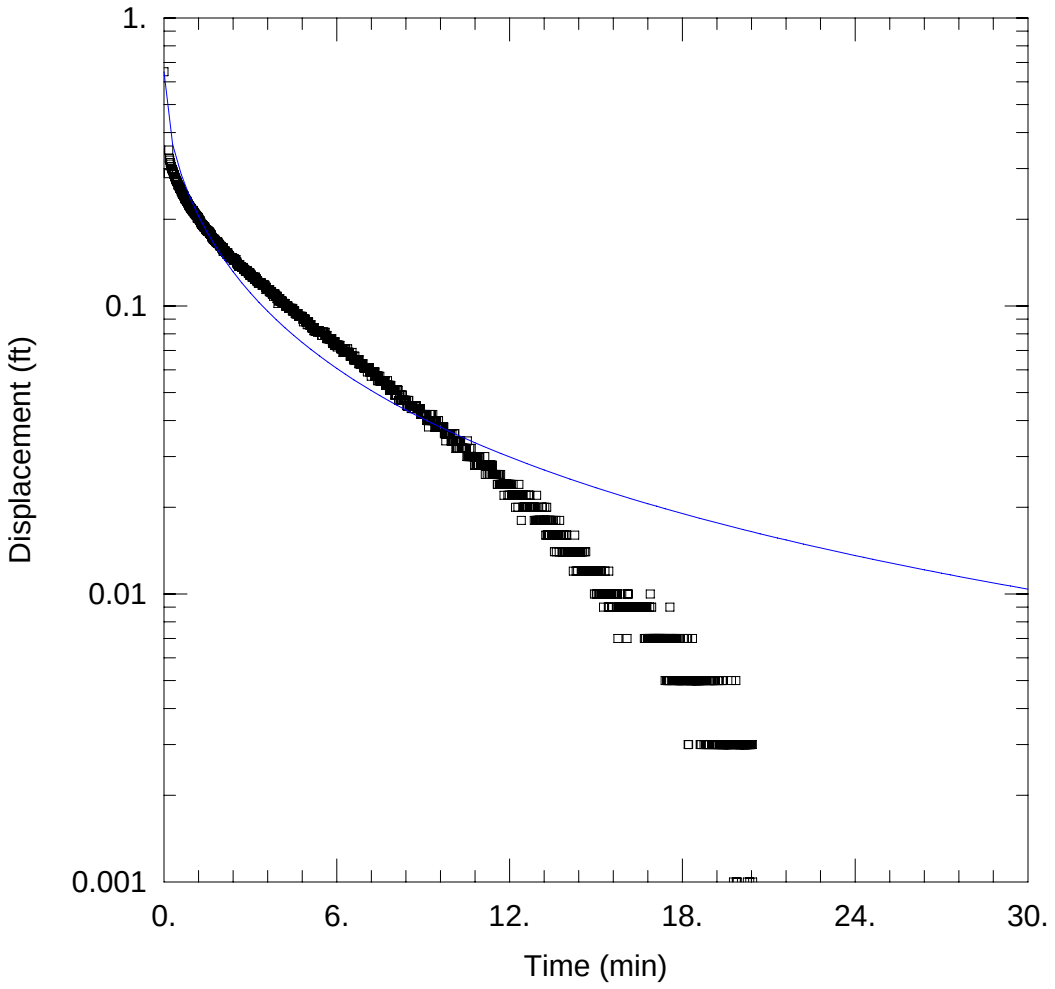
Saturated Thickness: 39.92 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0004)

Initial Displacement: 0.65 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 1.863 ft/day
y0 = 0.2266 ft



BSMW0004 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW4-in1KGS.aqt
Date: 02/12/09 Time: 13:56:54

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft

WELL DATA (BSMW0004)

Initial Displacement: 0.65 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft

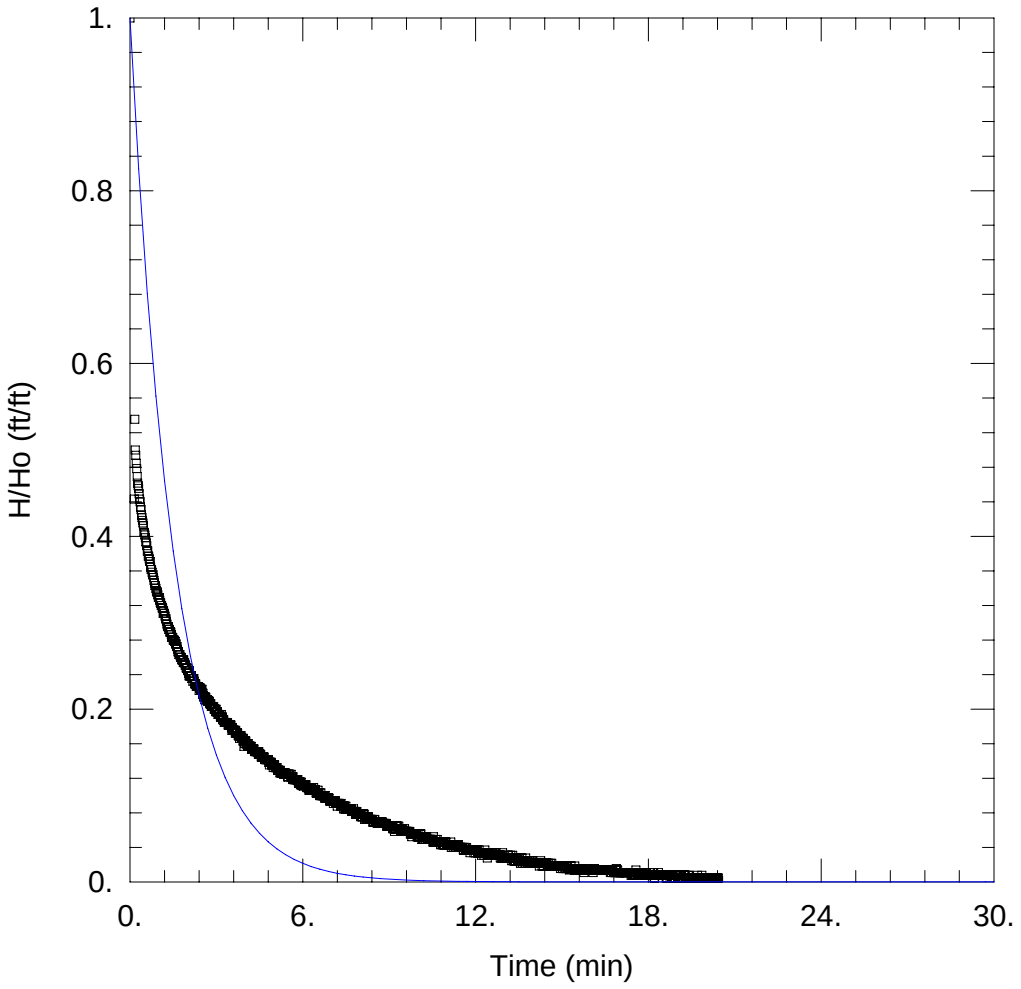
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.3612 ft/day
Kz/Kr = 1.

Ss = 0.002505 ft^{-1}



BSMW0004 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW4-in1SG.aqt
Date: 02/12/09 Time: 13:57:22

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

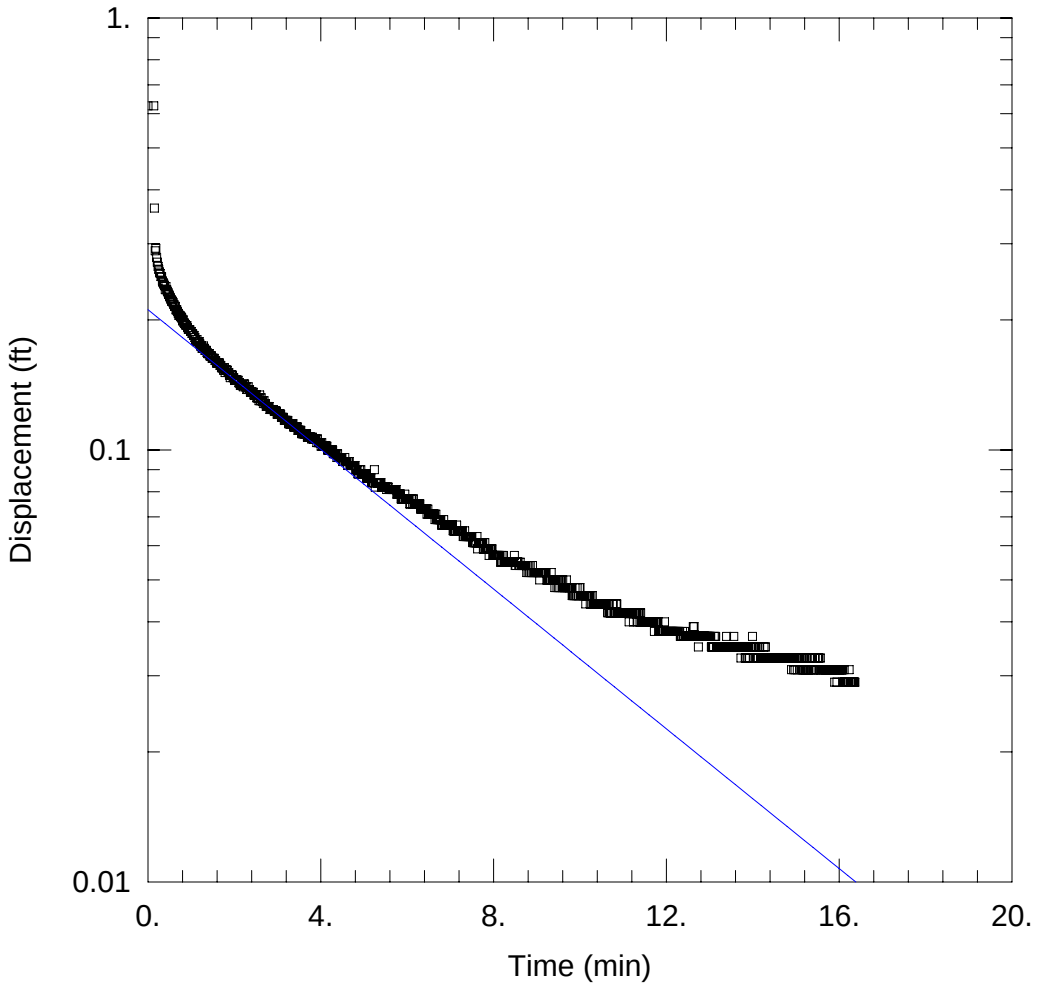
WELL DATA (BSMW0004)

Initial Displacement: 0.65 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.6139 ft/day Le = 0.1 ft



BSMW0004 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW4-in2BR.aqt
Date: 02/12/09 Time: 13:57:57

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

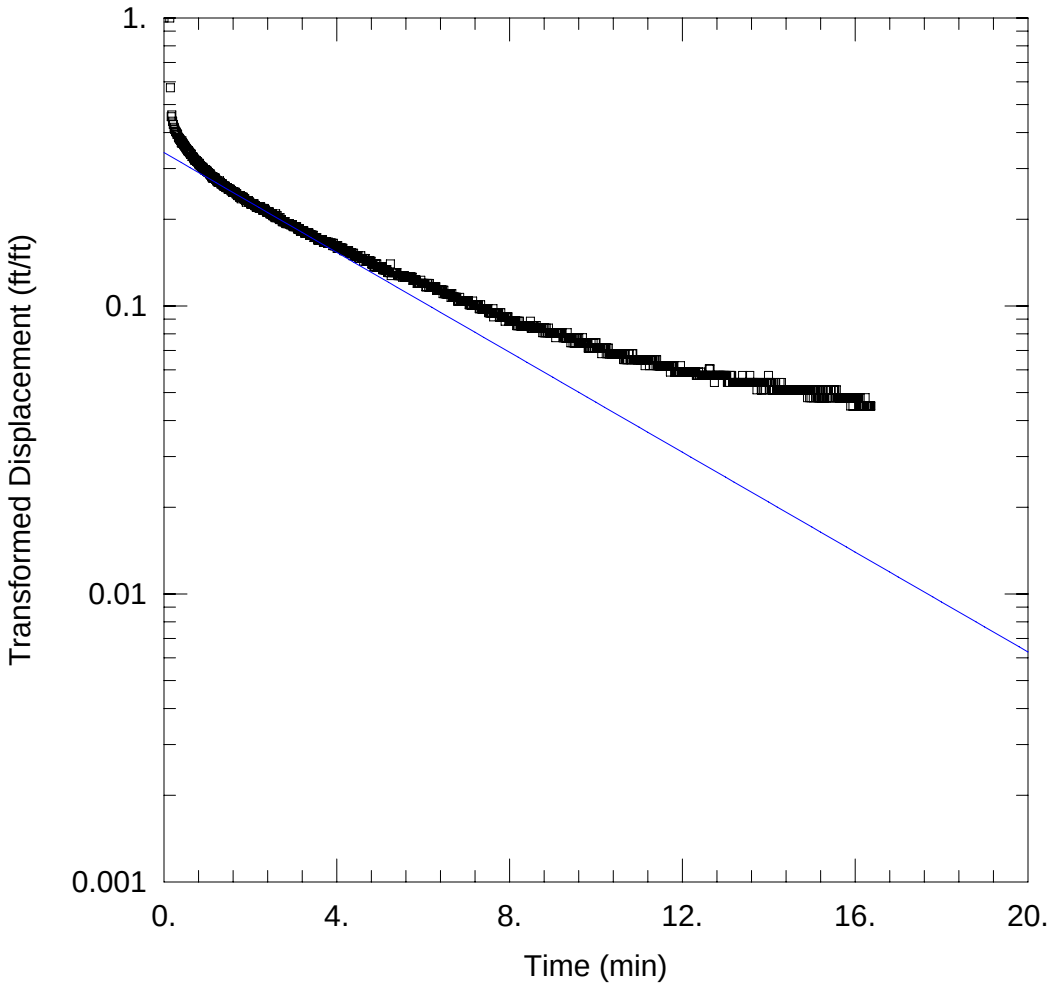
WELL DATA (BSMW0004)

Initial Displacement: 0.626 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.241 ft/day y0 = 0.2112 ft



BSMW0004 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW4-in2DGN.aqt
Date: 02/12/09 Time: 13:58:24

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

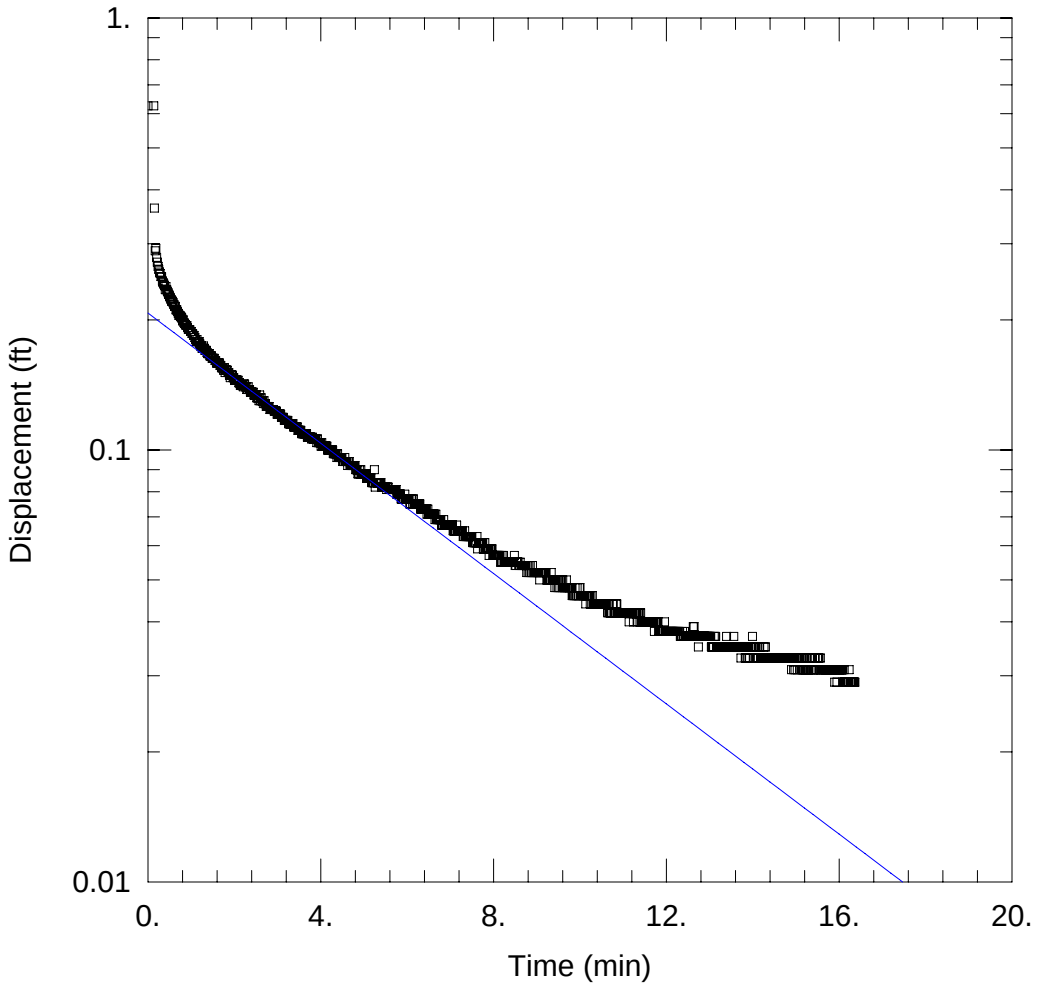
Saturated Thickness: 39.92 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0004)

Initial Displacement: 0.626 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Dagan
K = 1.604 ft/day
y0 = 0.2178 ft



BSMW0004 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW4-in2HV.aqt
Date: 02/12/09 Time: 13:58:55

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

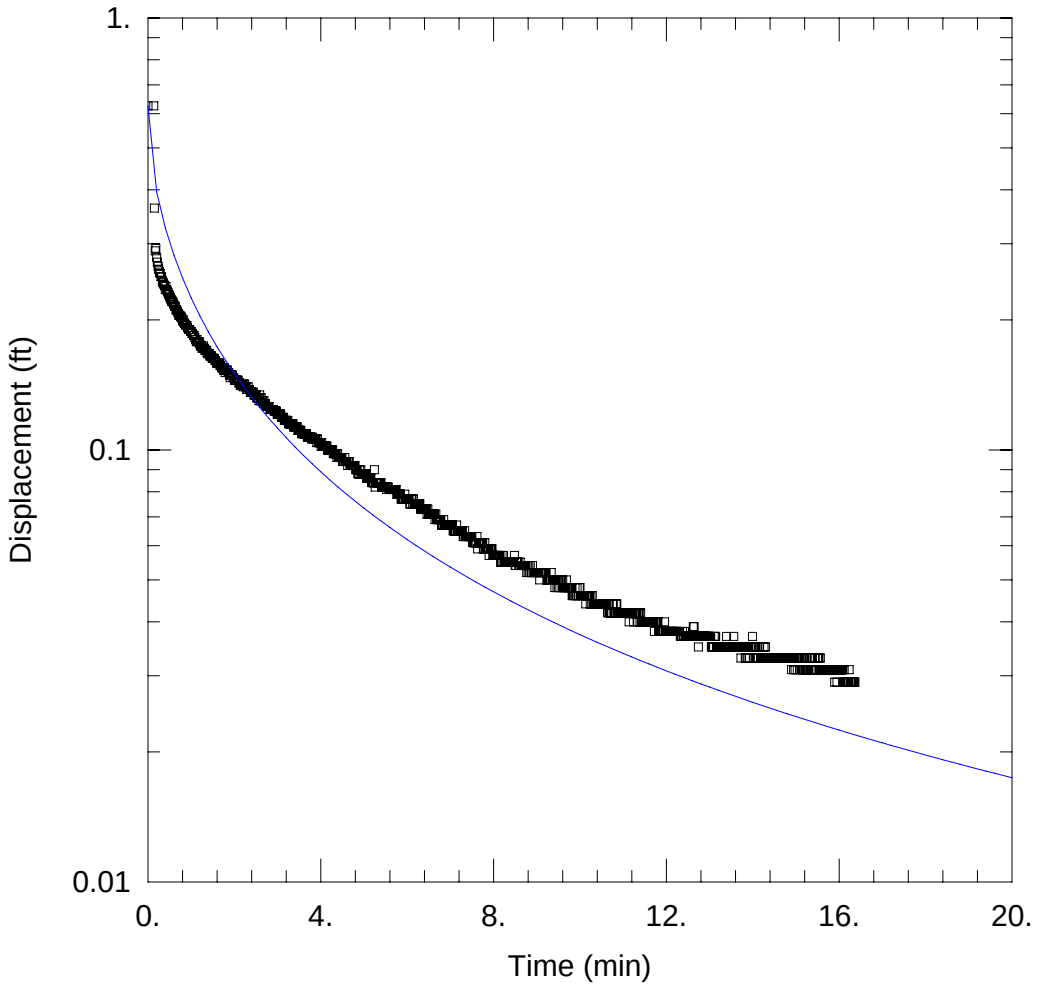
WELL DATA (BSMW0004)

Initial Displacement: 0.626 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.839 ft/day y0 = 0.2074 ft



BSMW0004 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW4-in2KGS.aqt
Date: 02/12/09 Time: 13:59:34

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft

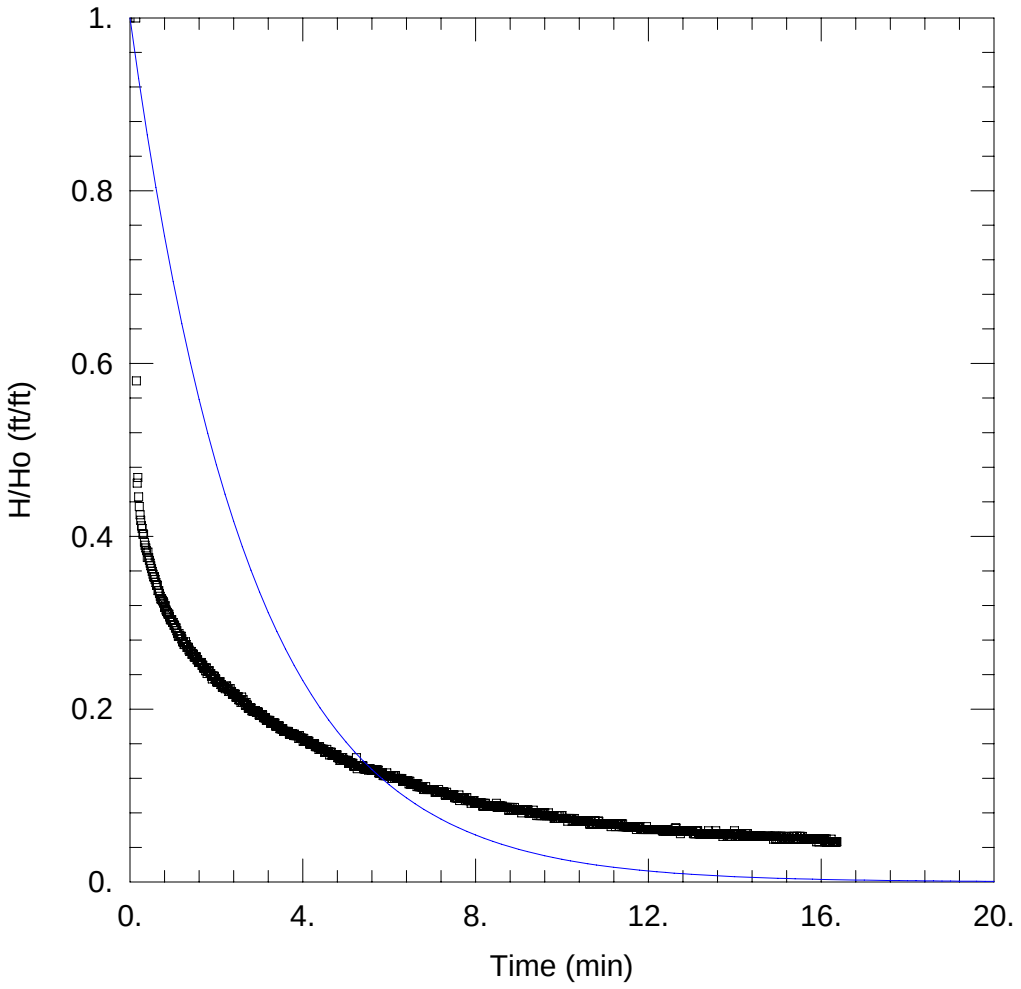
WELL DATA (BSMW0004)

Initial Displacement: 0.626 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.3392 ft/day
Kz/Kr = 1.
Ss = 0.002505 ft^{-1}



BSMW0004 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW4-in2SG.aqt
Date: 02/12/09 Time: 13:59:59

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

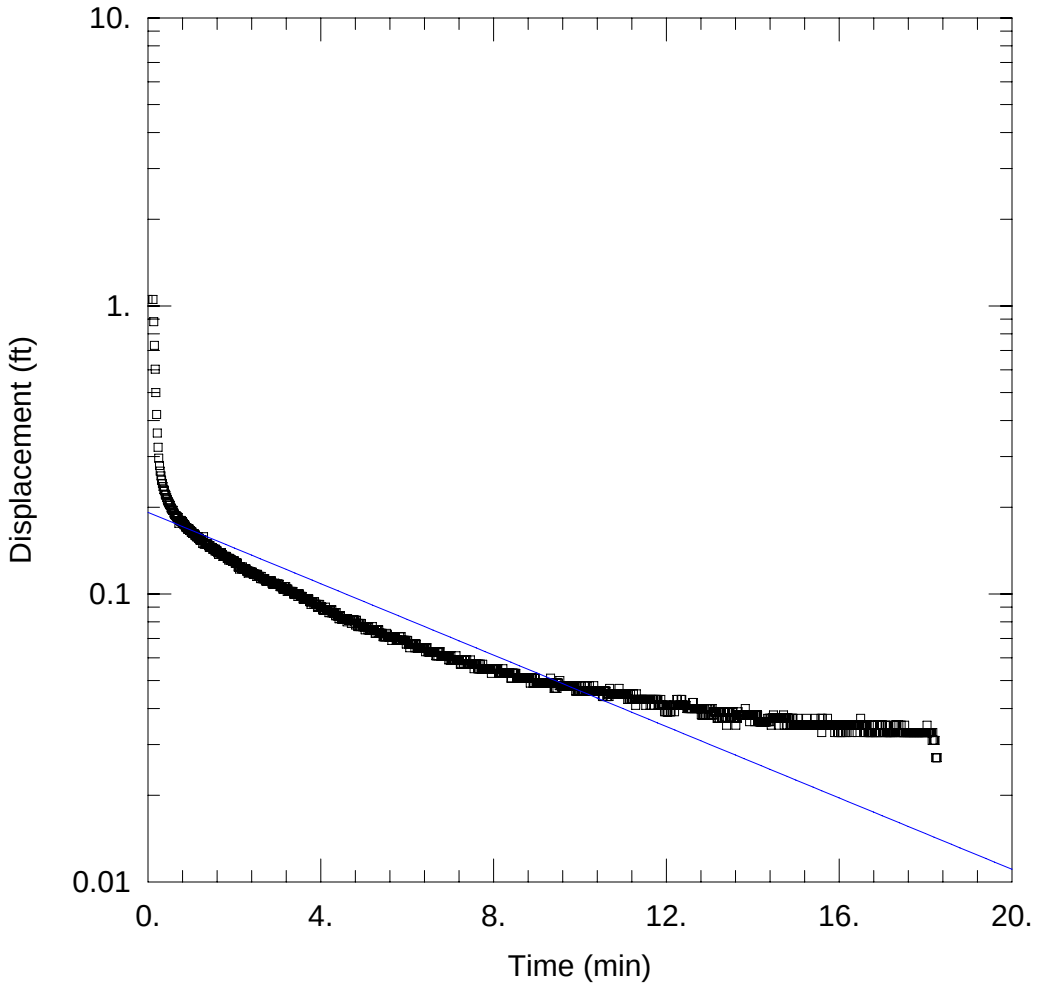
WELL DATA (BSMW0004)

Initial Displacement: 0.626 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.3495 ft/day Le = 0.1 ft



BSMW0004 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW4-out1BR.aqt
Date: 02/12/09 Time: 14:36:18

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin - Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

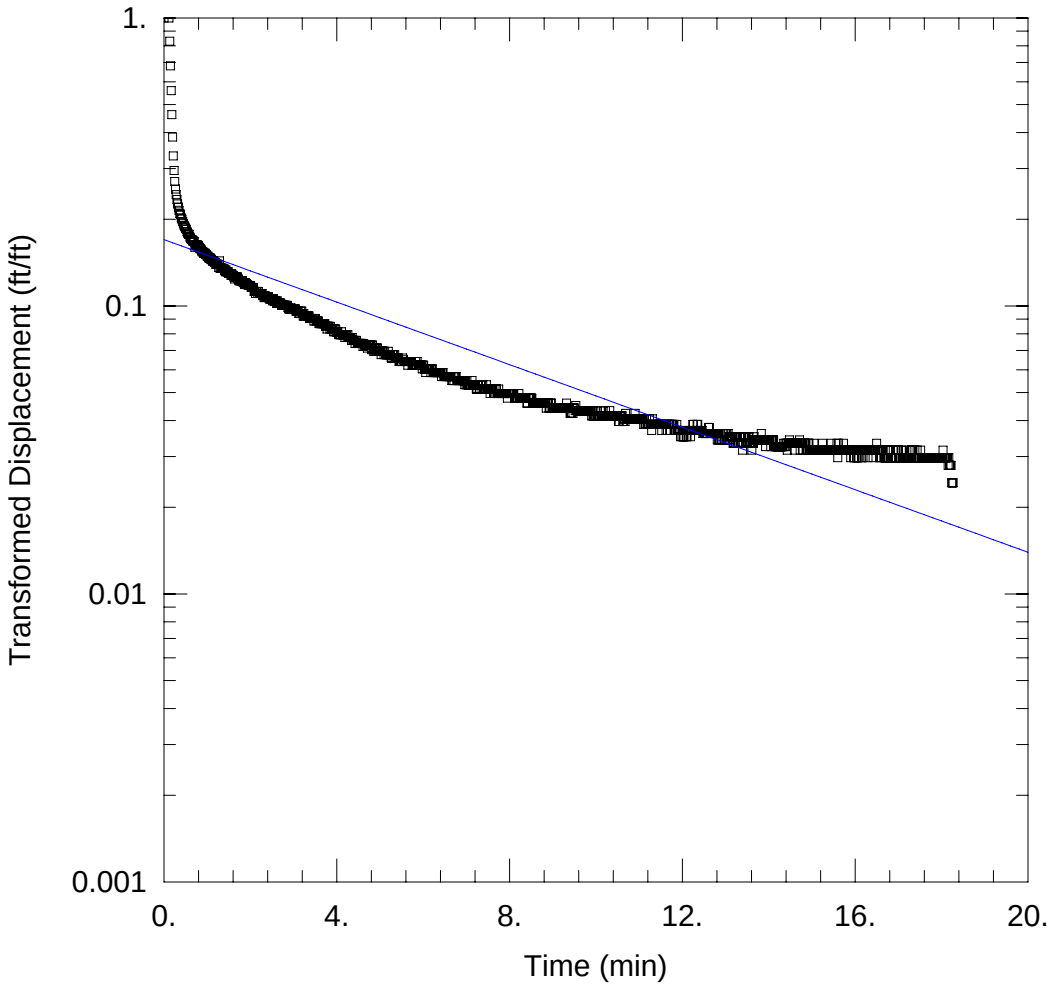
WELL DATA (BSMW0004)

Initial Displacement: 1.053 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.951 ft/day y0 = 0.192 ft



BSMW0004 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW4-out1DGN.aqt
Date: 02/12/09 Time: 14:37:07

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin - Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

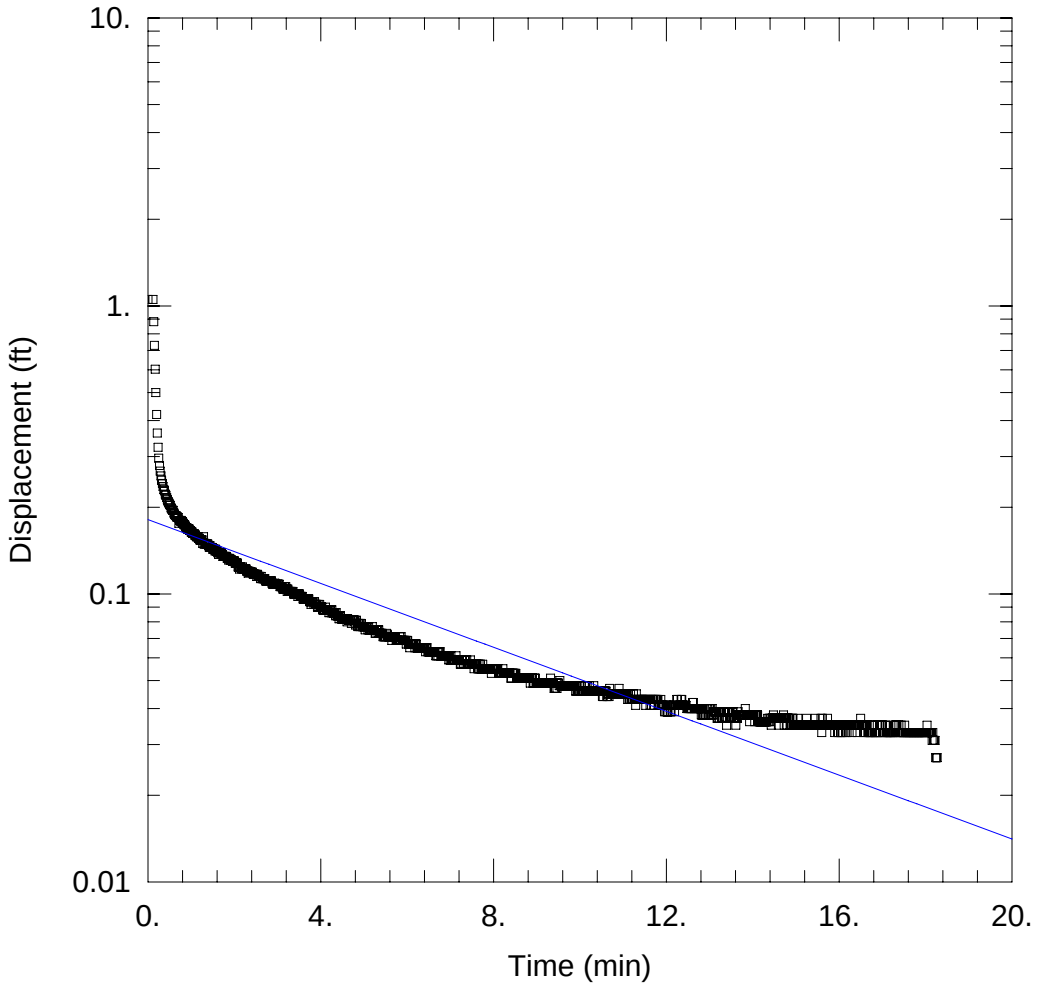
WELL DATA (BSMW0004)

Initial Displacement: 1.053 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 1.004 ft/day y0 = 0.1871 ft



BSMW0004 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW4-out1HV.aqt
Date: 02/12/09 Time: 14:37:35

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin - Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

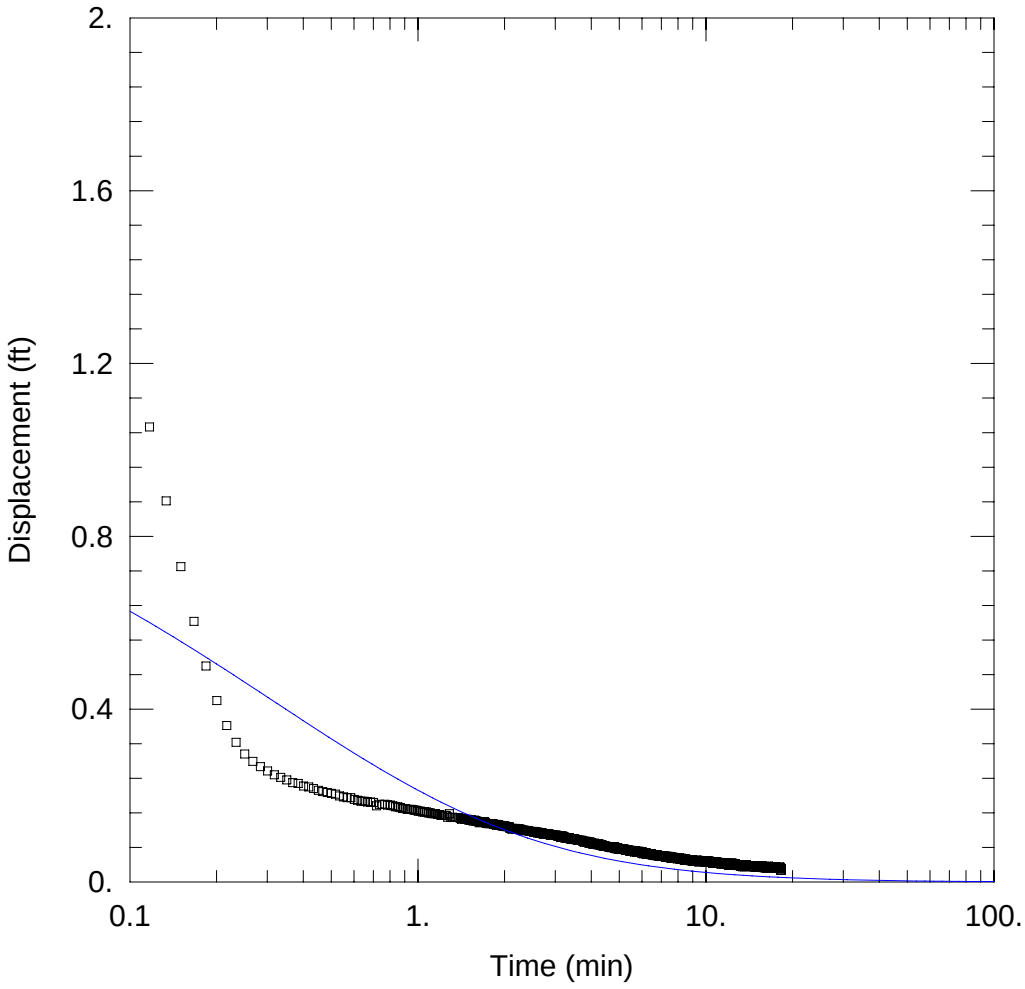
WELL DATA (BSMW0004)

Initial Displacement: 1.053 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.353 ft/day y0 = 0.1811 ft



BSMW0004 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW4-out1KGS.aqt
Date: 02/12/09 Time: 14:38:01

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin - Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft

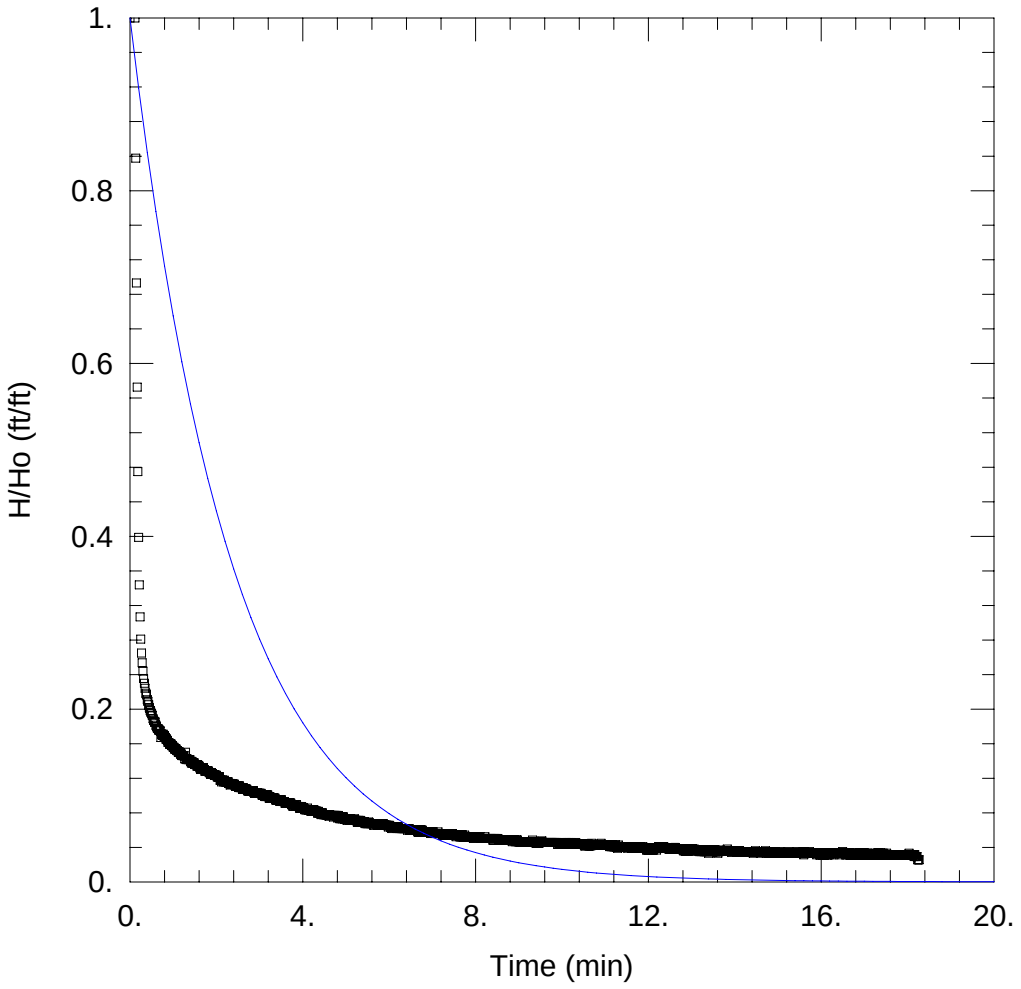
WELL DATA (BSMW0004)

Initial Displacement: 1.053 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.8705 ft/day
Kz/Kr = 1.
Ss = 0.002505 ft^{-1}



BSMW0004 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW4-out1SG.aqt
Date: 02/12/09 Time: 14:38:30

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin - Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

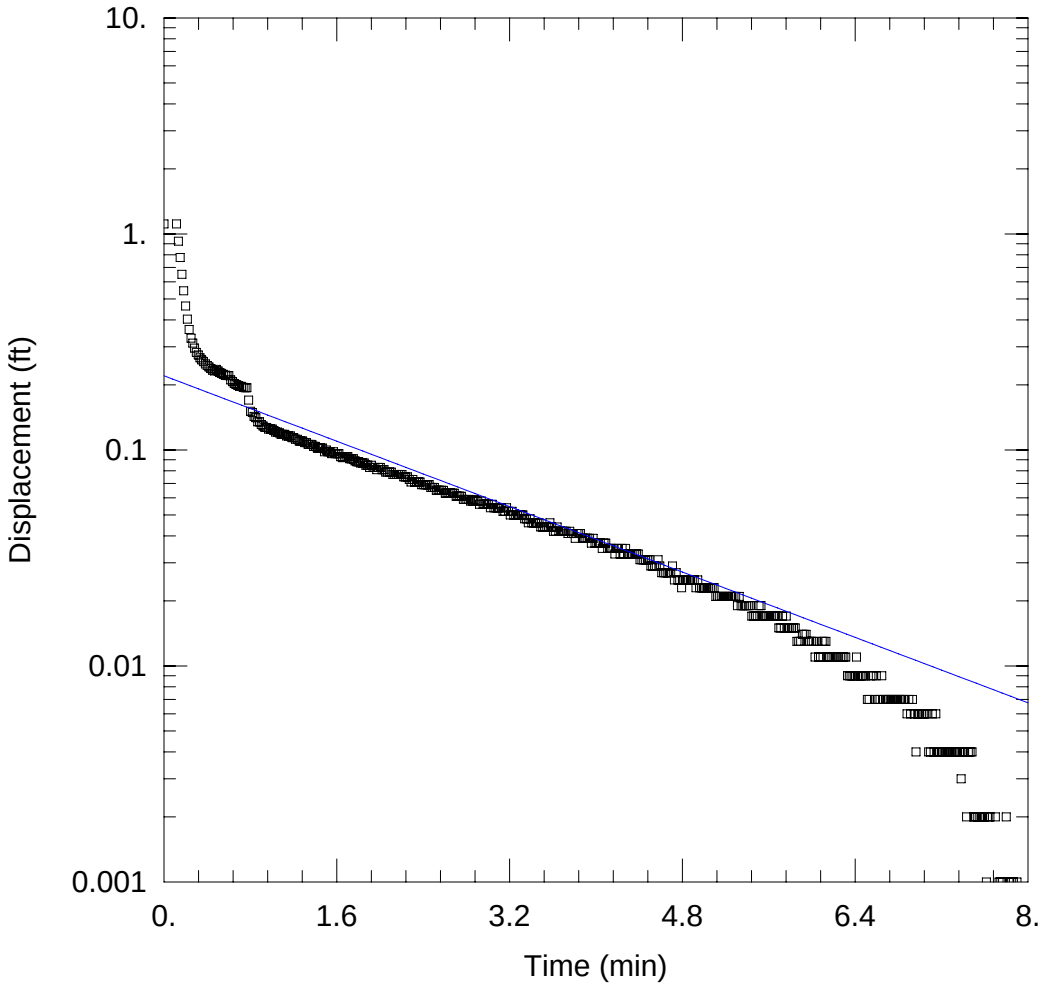
WELL DATA (BSMW0004)

Initial Displacement: 1.053 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.406 ft/day Le = 0.1 ft



BSMW0004 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW4-out2BR.aqt
Date: 02/12/09 Time: 14:39:00

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

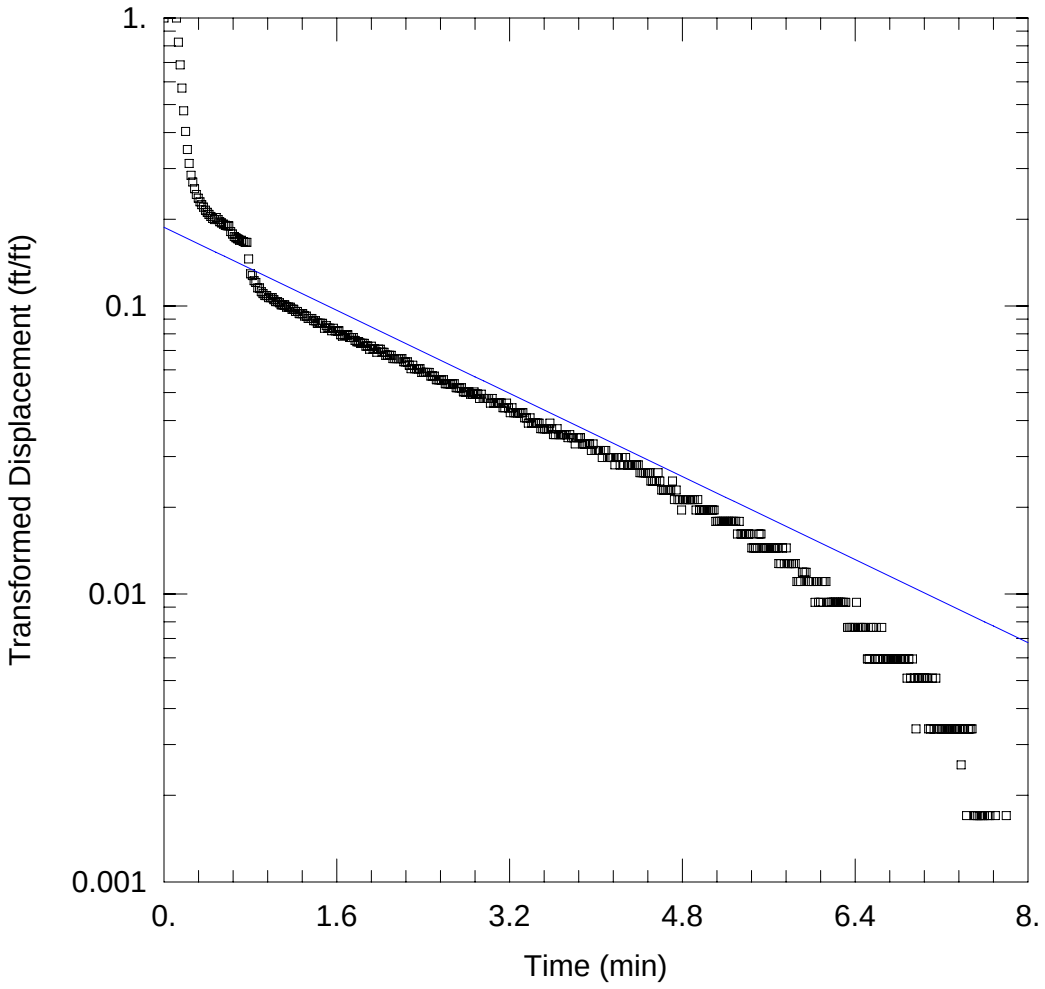
WELL DATA (BSMW0004)

Initial Displacement: 1.112 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.904 ft/day y0 = 0.2203 ft



BSMW0004 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW4-out2DGN.aqt
Date: 02/12/09 Time: 14:39:31

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

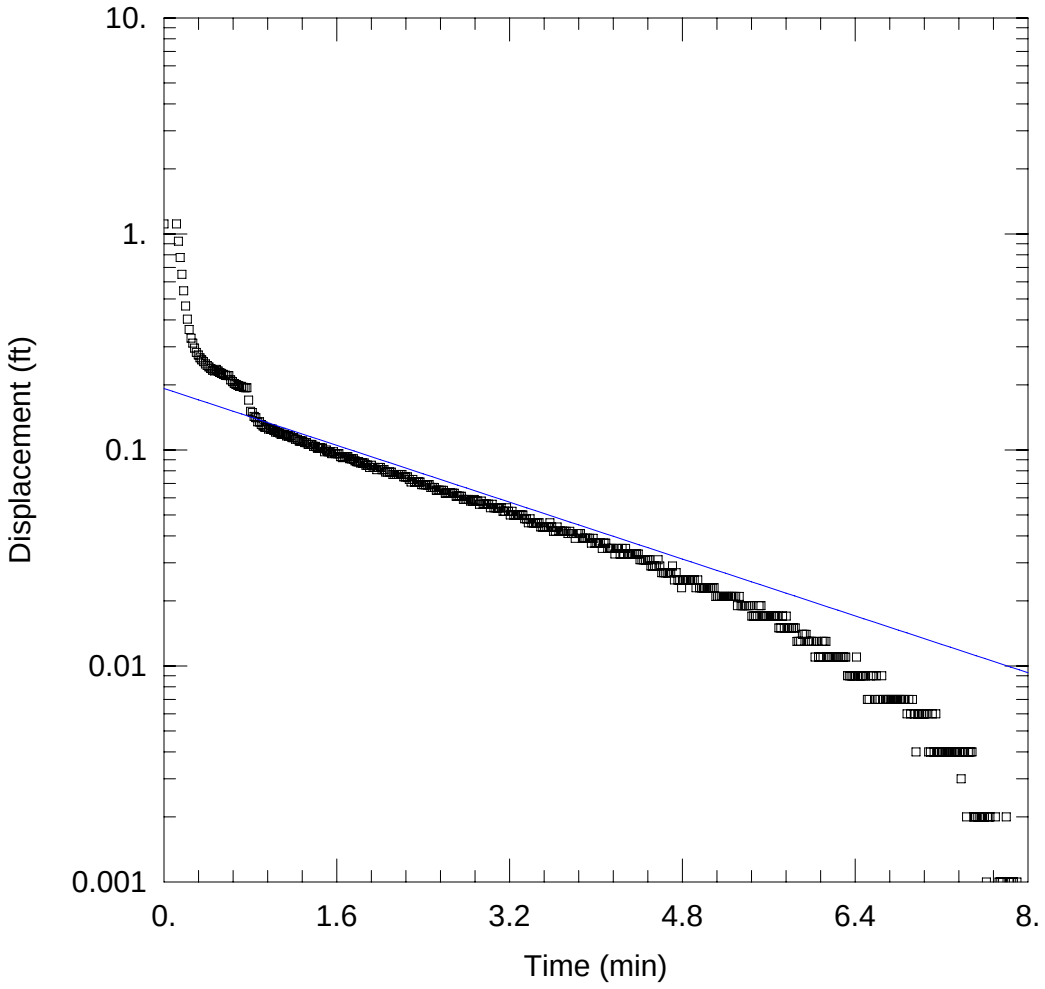
WELL DATA (BSMW0004)

Initial Displacement: 1.112 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 3.336 ft/day y0 = 0.2185 ft



BSMW0004 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW4-out2HV.aqt
Date: 02/12/09 Time: 14:40:04

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

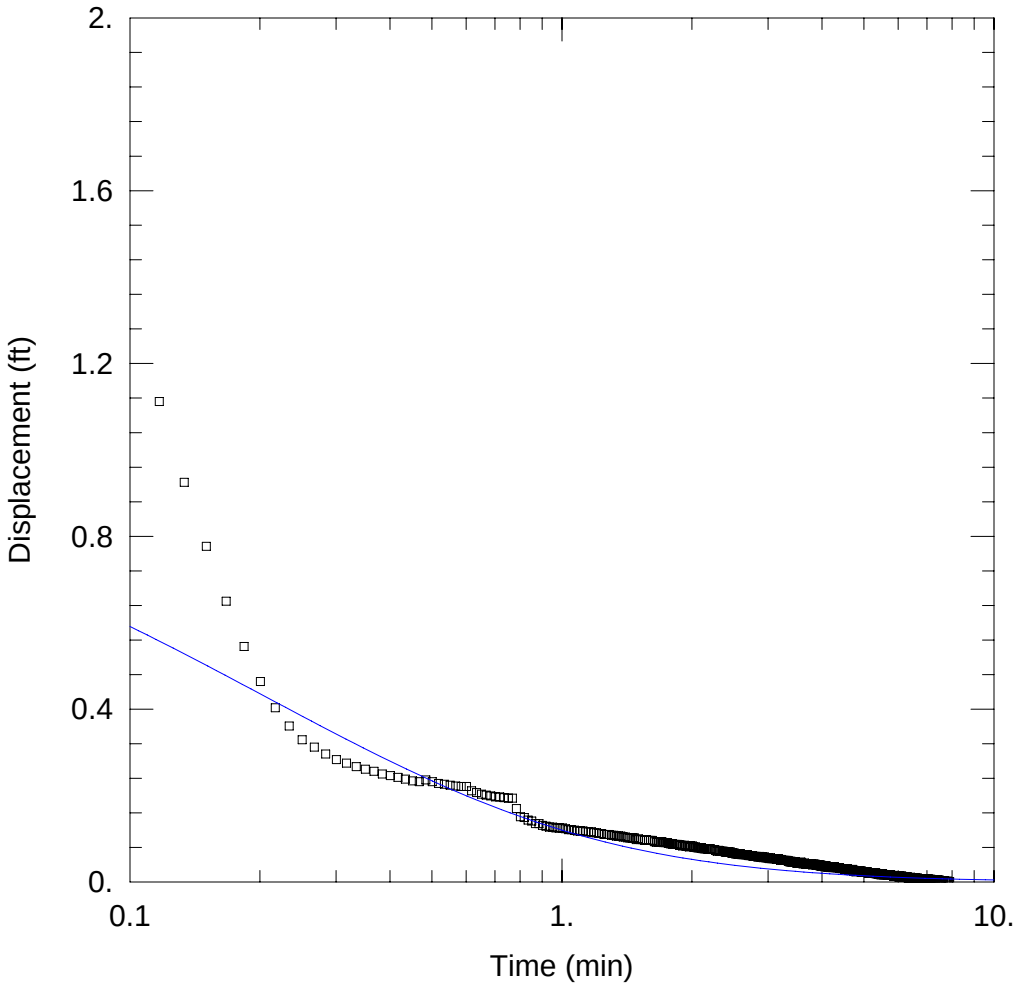
Saturated Thickness: 39.92 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0004)

Initial Displacement: 1.112 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 4.014 ft/day
y0 = 0.1925 ft



BSMW0004 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW4-out2KGS.aqt
Date: 02/12/09 Time: 14:40:45

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft

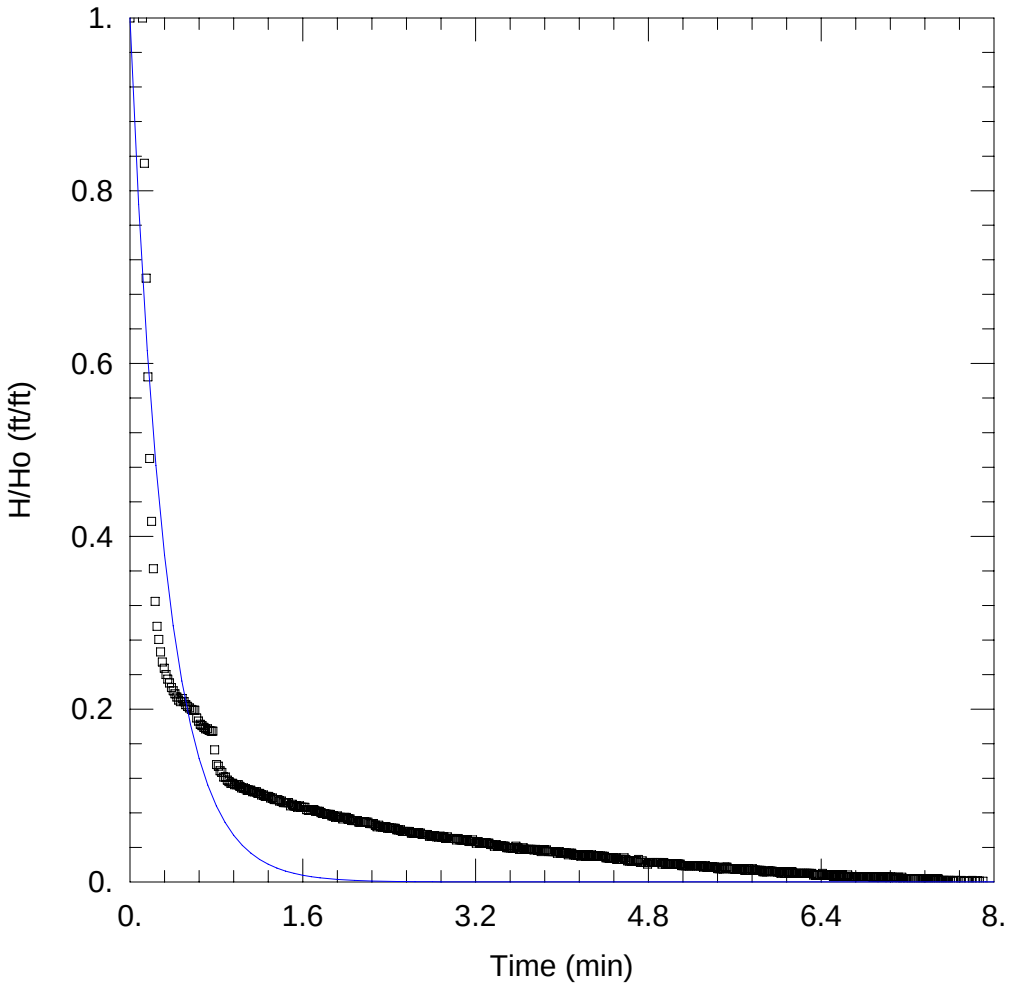
WELL DATA (BSMW0004)

Initial Displacement: 1.112 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 2.262 ft/day
Kz/Kr = 1.
Ss = 0.0009471 ft^{-1}



BSMW0004 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW4-out2SG.aqt
Date: 02/12/09 Time: 14:41:13

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0004
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.92 ft Anisotropy Ratio (Kz/Kr): 1.

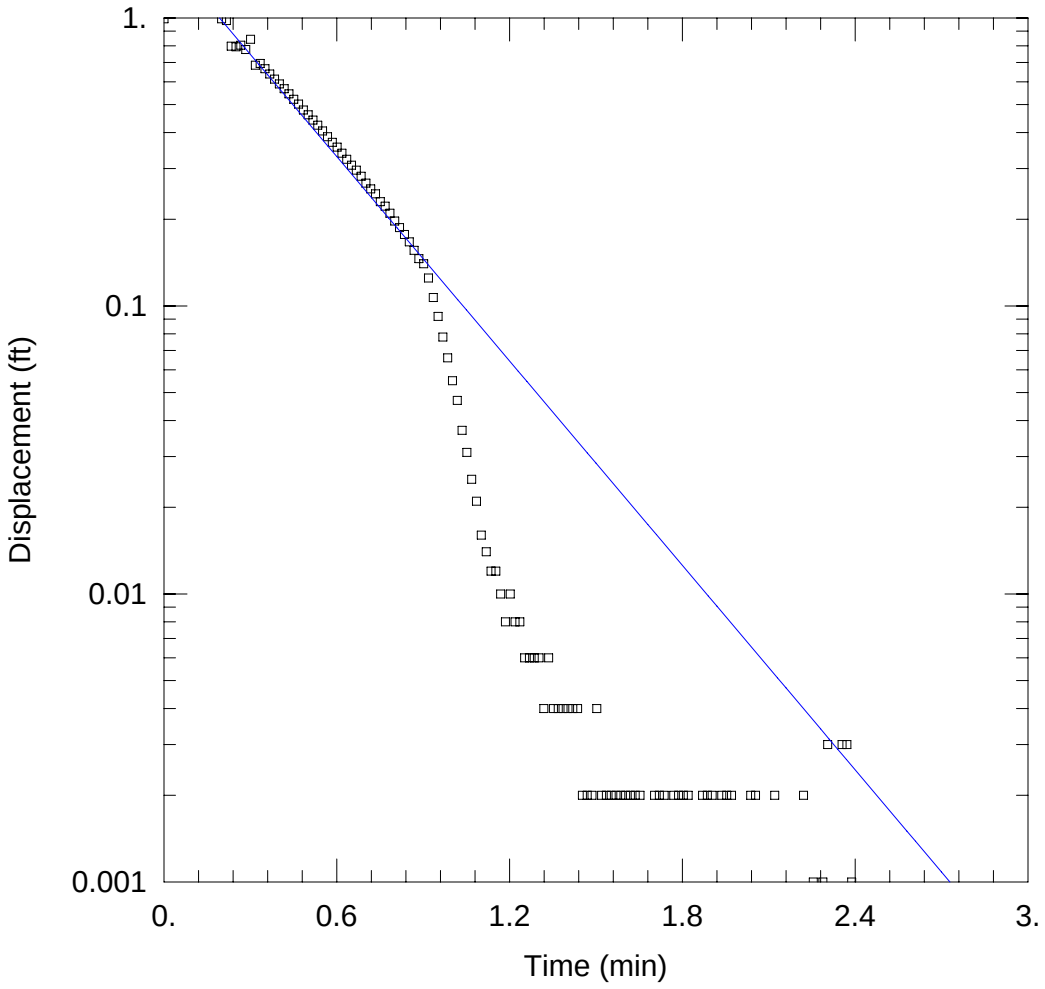
WELL DATA (BSMW0004)

Initial Displacement: 1.112 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.92 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 2.917 ft/day Le = 0.1 ft



BSMW0005 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW5-in1BR.aqt
Date: 02/12/09 Time: 14:00:24

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

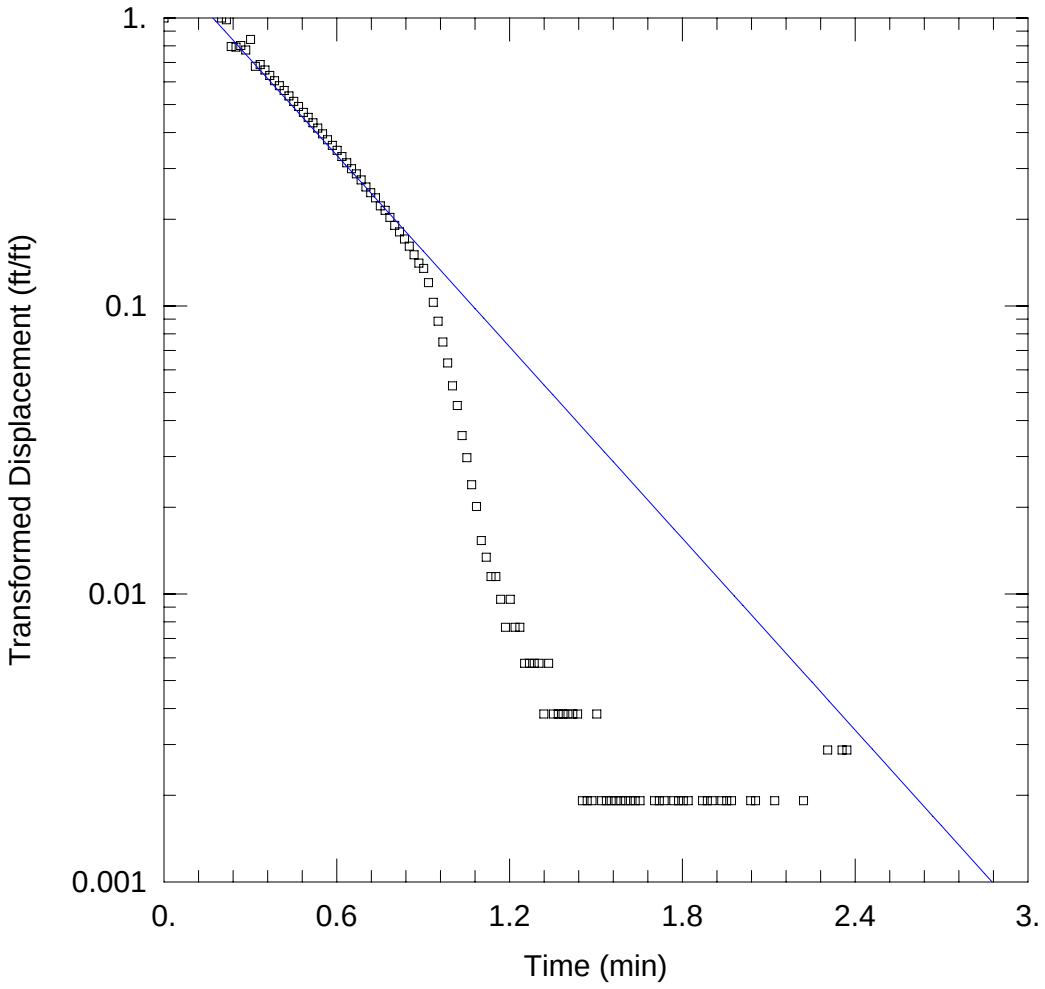
WELL DATA (BSMW0005)

Initial Displacement: 0.993 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 18.16 ft/day y0 = 1.69 ft



BSMW0005 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW5-in1DGN.aqt
Date: 02/12/09 Time: 14:00:57

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

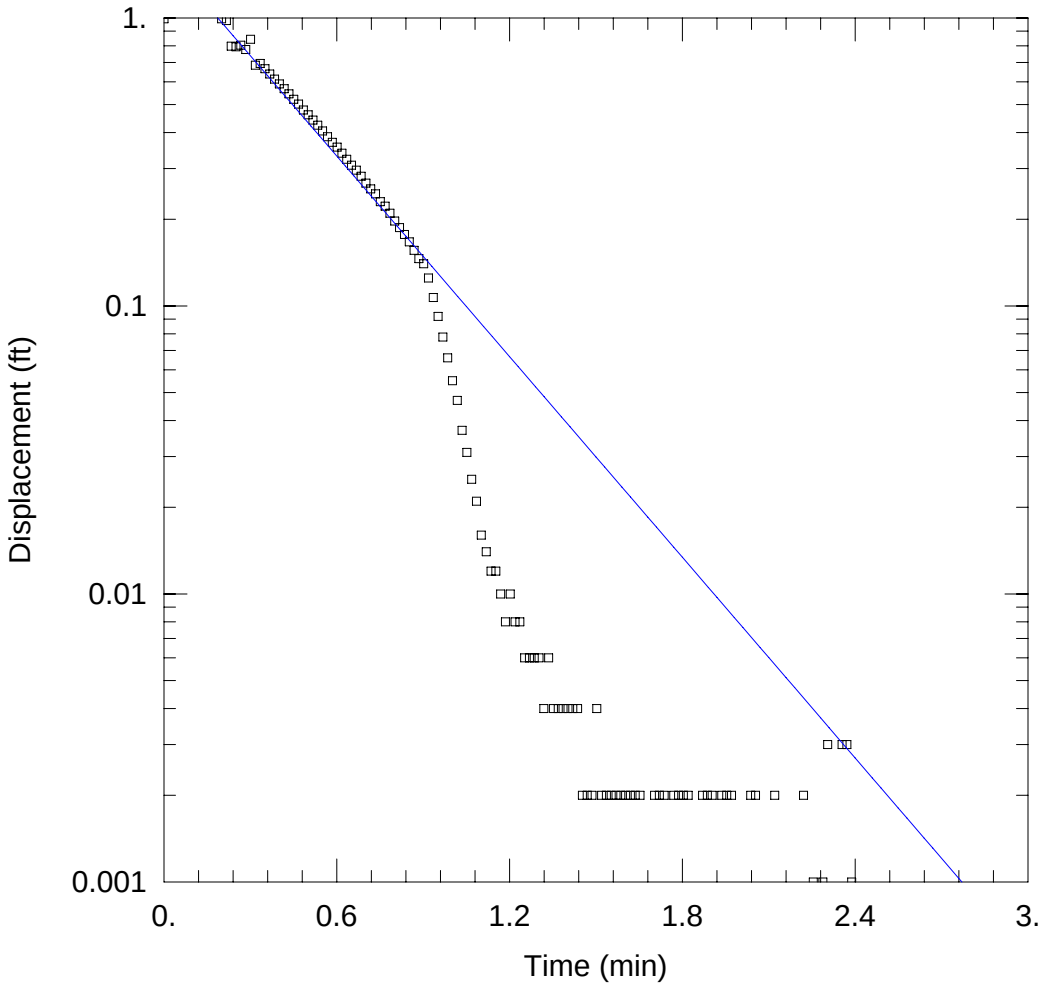
WELL DATA (BSMW0005)

Initial Displacement: 0.993 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 20.51 ft/day y0 = 1.492 ft



BSMW0005 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW5-in1HV.aqt
Date: 02/12/09 Time: 14:01:22

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

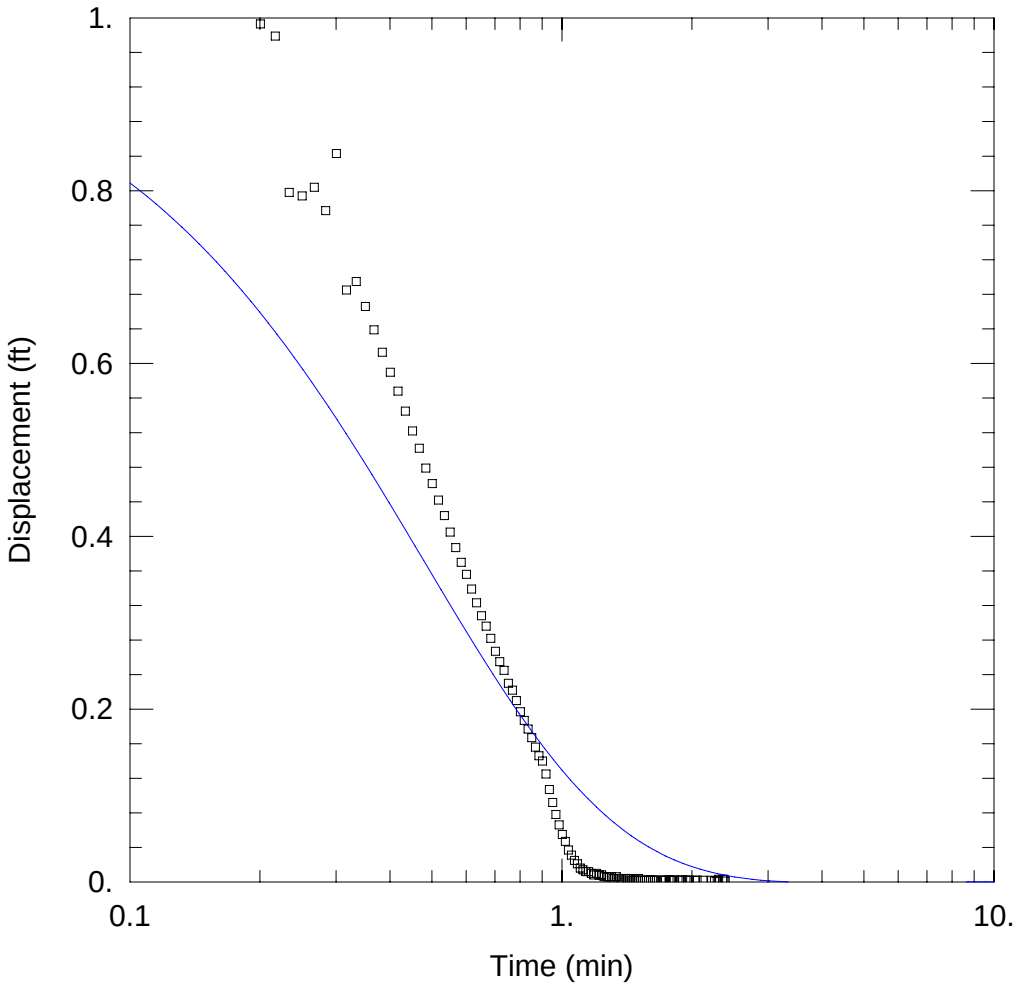
WELL DATA (BSMW0005)

Initial Displacement: 0.993 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 28.33 ft/day y0 = 1.648 ft



BSMW0005 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW5-in1KGS.aqt
Date: 02/12/09 Time: 14:01:47

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft

WELL DATA (BSMW0005)

Initial Displacement: 0.993 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft

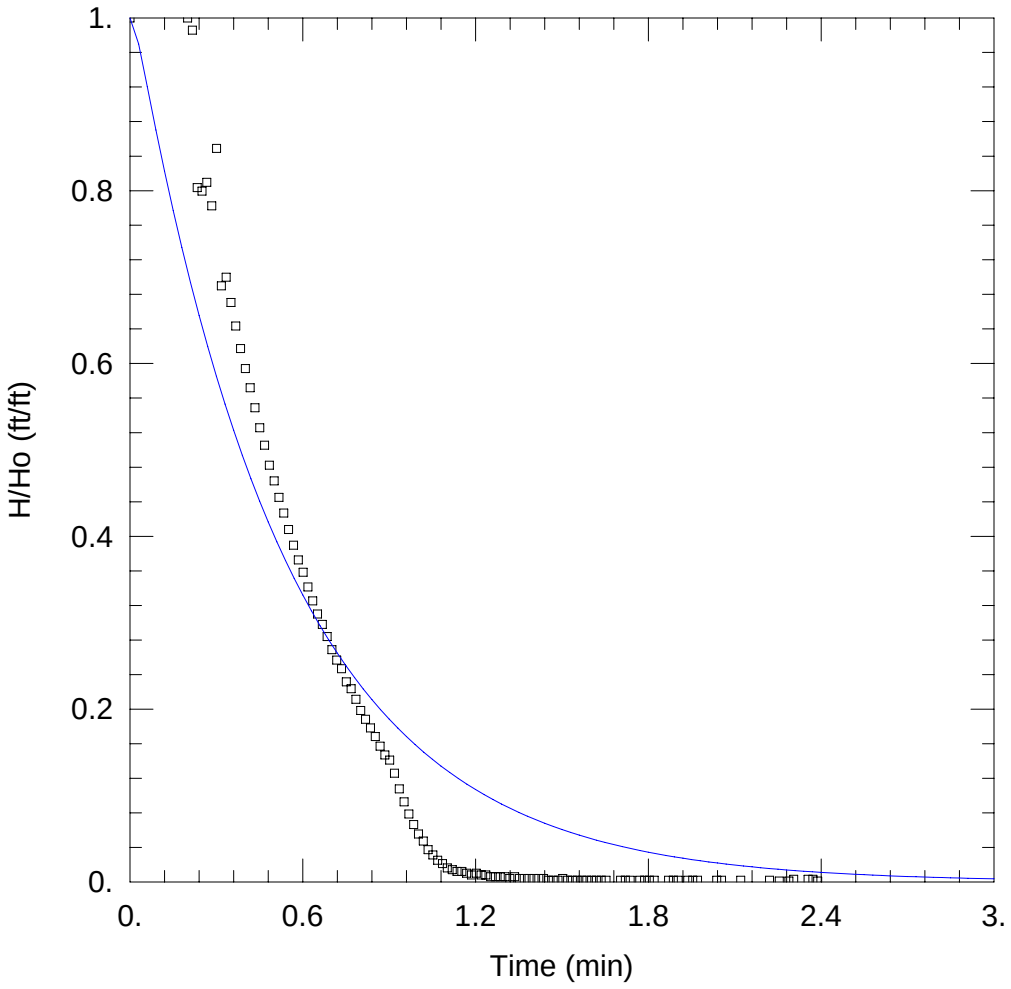
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 2.283 ft/day
Kz/Kr = 1.

Ss = 2.527E-12 ft^{-1}



BSMW0005 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW5-in1SG.aqt
Date: 02/12/09 Time: 14:02:14

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

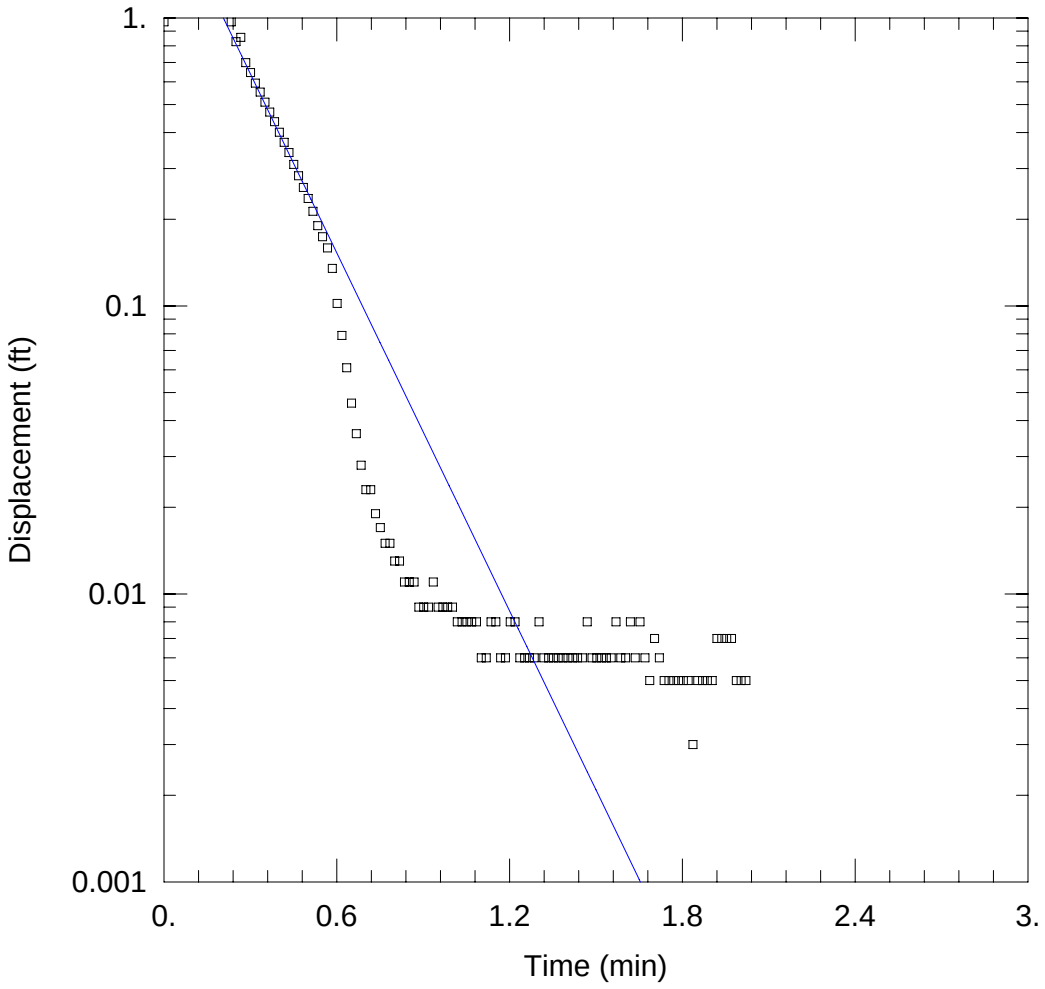
WELL DATA (BSMW0005)

Initial Displacement: 0.993 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 1.76 ft/day Le = 1000. ft



BSMW0005 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW5-in2BR.aqt
Date: 02/12/09 Time: 14:02:43

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

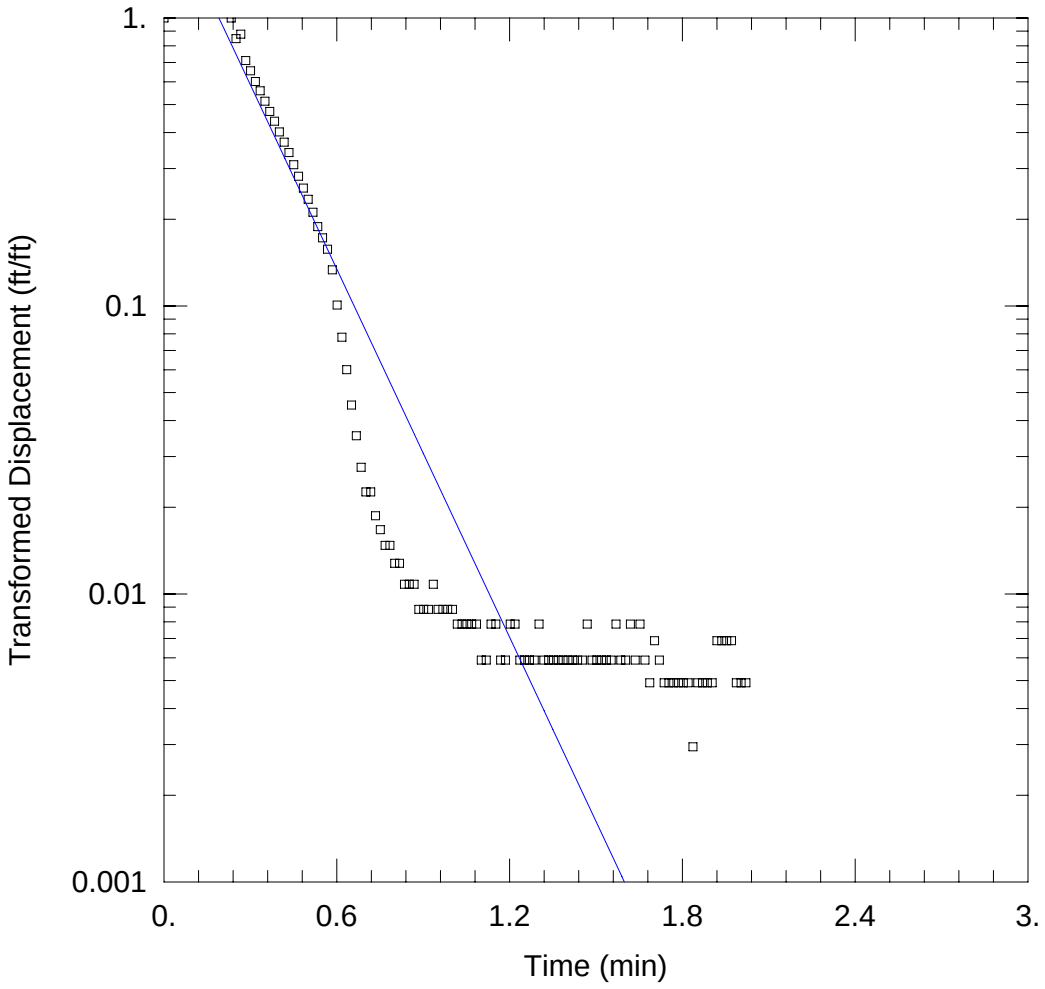
Saturated Thickness: 39.57 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0005)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 31.81 ft/day
y0 = 2.674 ft



BSMW0005 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW5-in2DGN.aqt
Date: 02/12/09 Time: 14:03:18

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

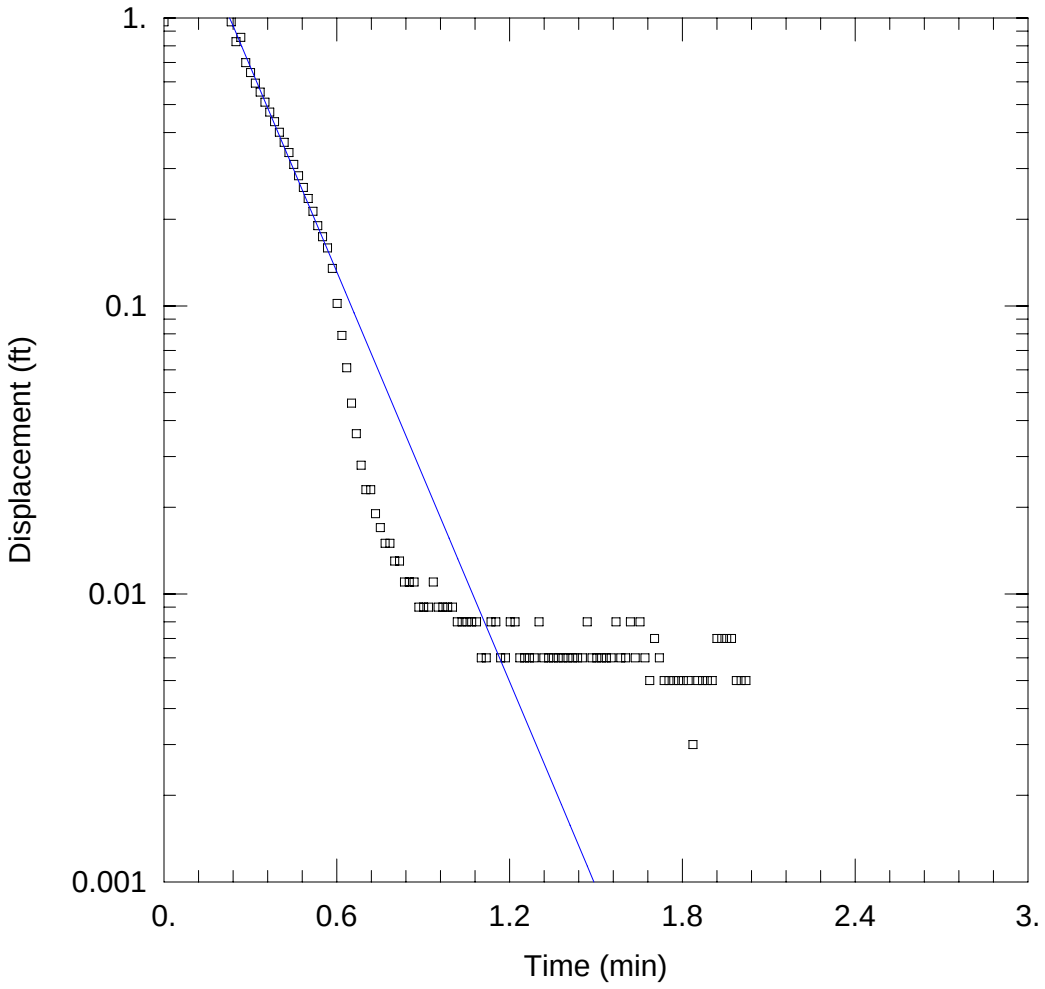
WELL DATA (BSMW0005)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 39.43 ft/day y0 = 2.299 ft



BSMW0005 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW5-in2HV.aqt
Date: 02/12/09 Time: 14:04:12

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

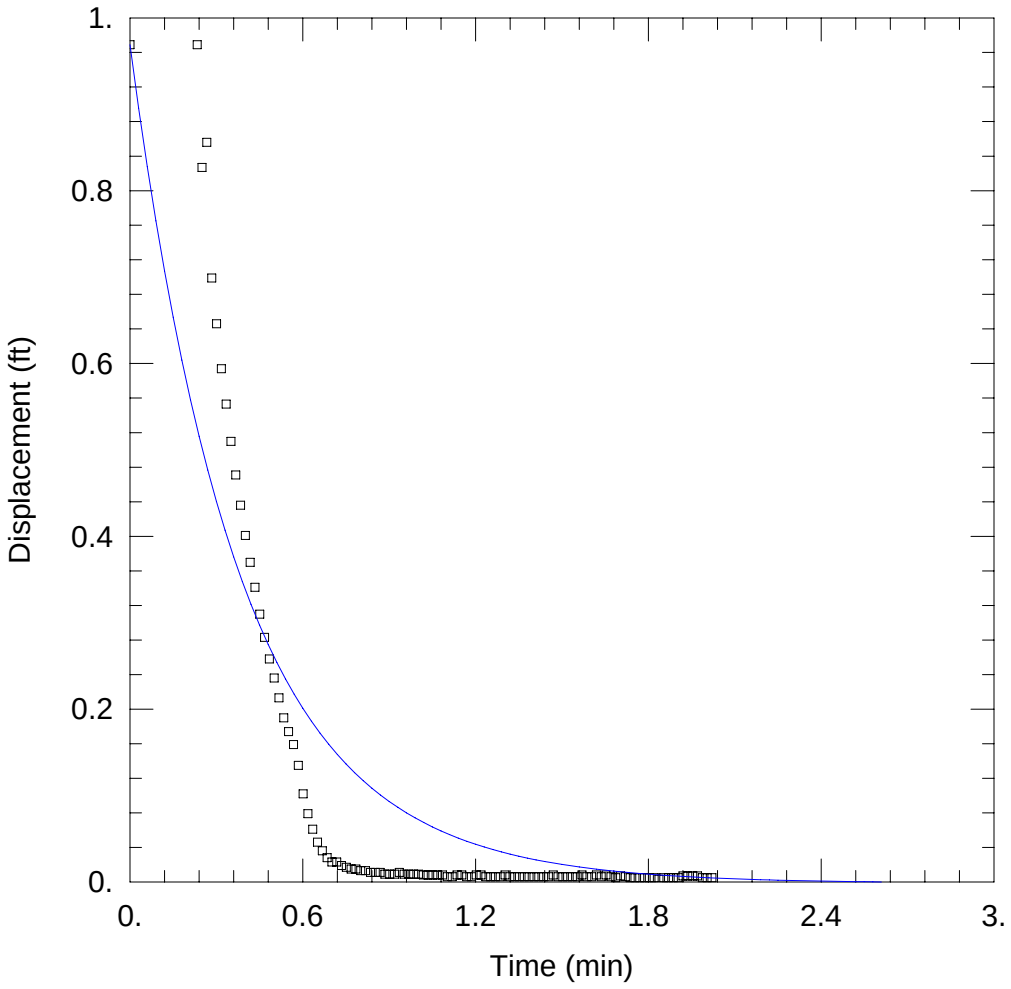
Saturated Thickness: 39.57 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0005)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 57.88 ft/day
y0 = 3.479 ft



BSMW0005 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW5-in2KGS.aqt
Date: 02/12/09 Time: 14:04:44

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft

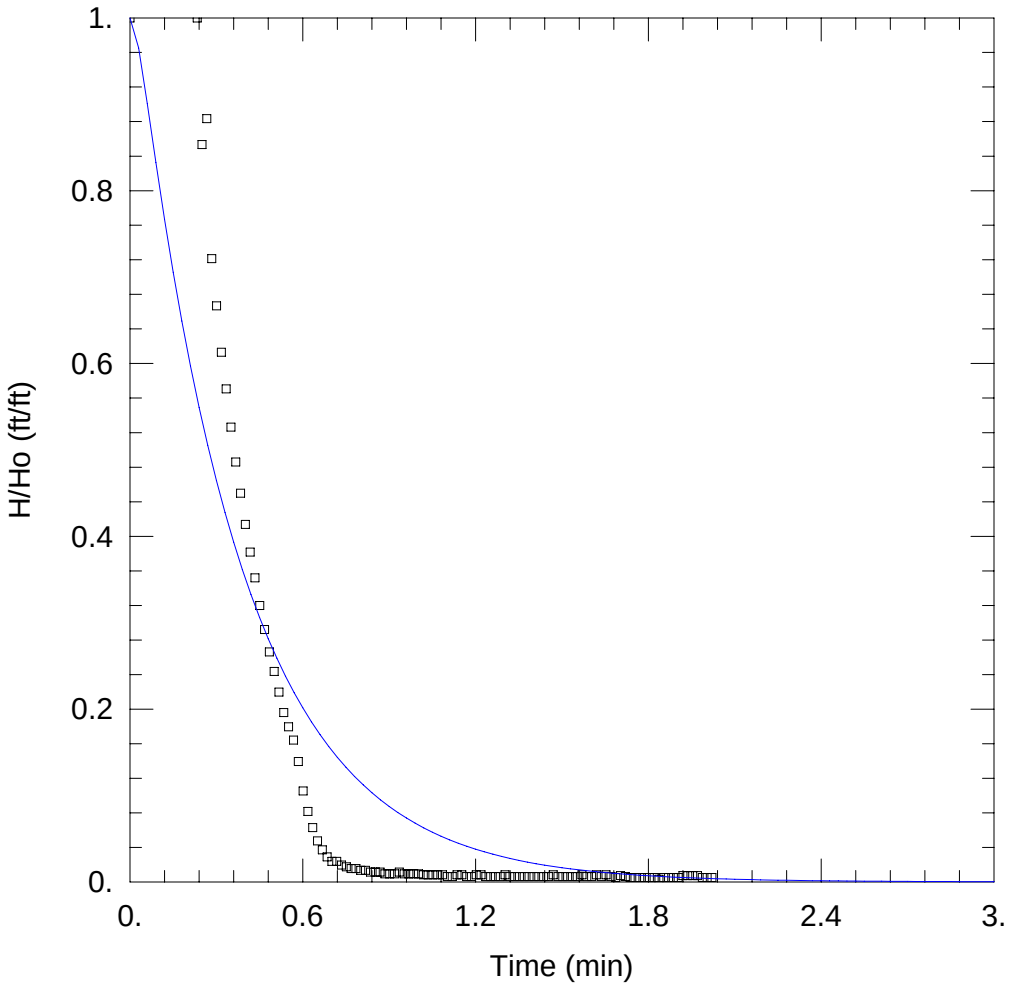
WELL DATA (BSMW0005)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 2.924 ft/day
Kz/Kr = 1.
Ss = 2.527E-12 ft^{-1}



BSMW0005 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW5-in2SG.aqt
Date: 02/12/09 Time: 14:05:11

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

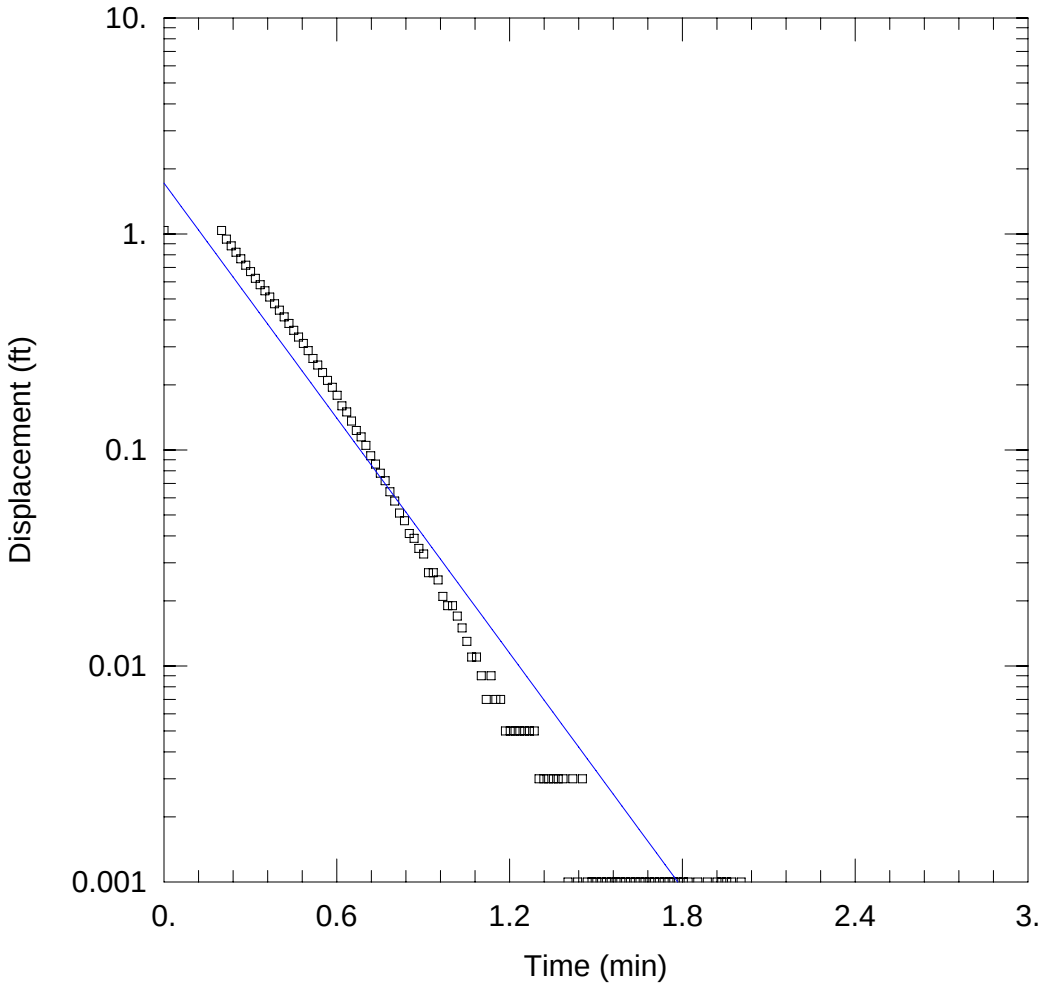
Saturated Thickness: 39.57 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0005)

Initial Displacement: 0.969 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 2.506 ft/day
Le = 1000. ft



BSMW0005 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW5-out1BR.aqt
Date: 02/12/09 Time: 15:32:19

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

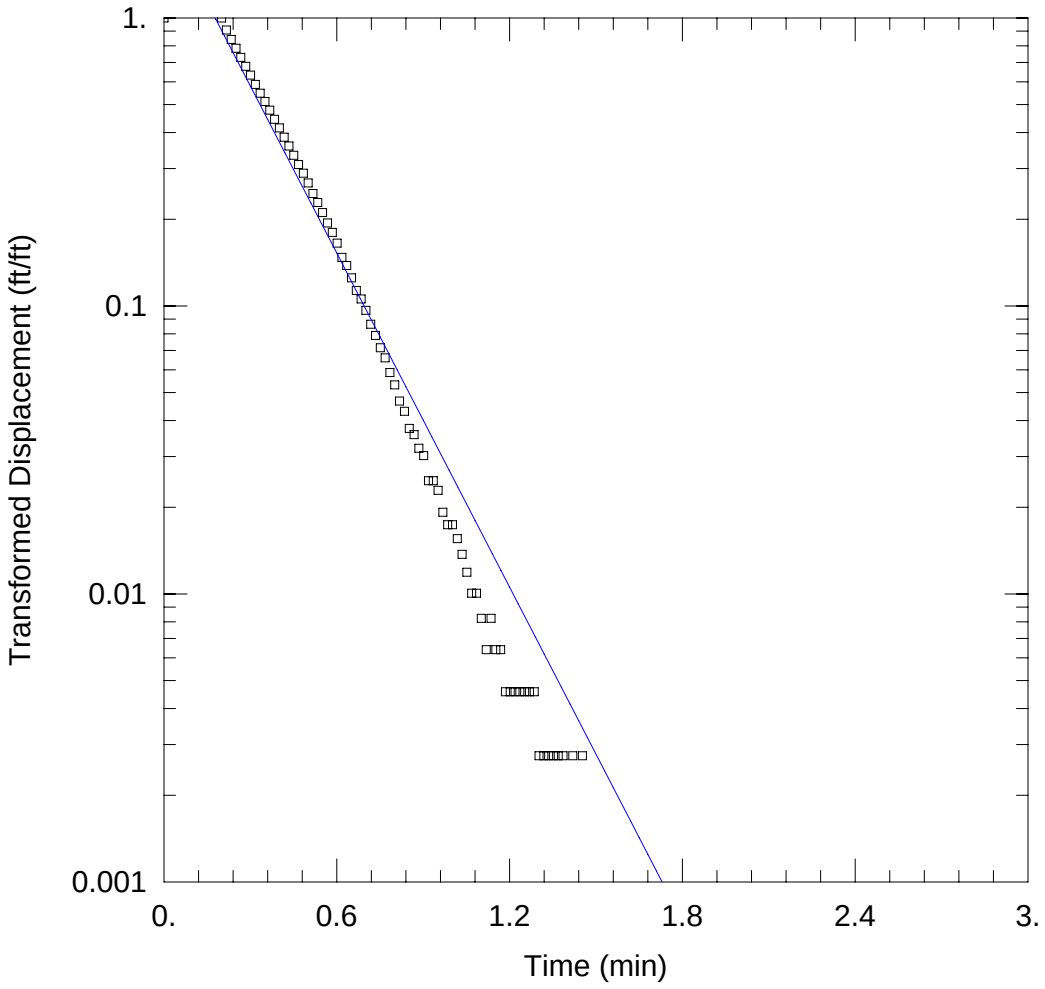
Saturated Thickness: 39.57 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0005)

Initial Displacement: 1.037 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 27.84 ft/day
y0 = 1.72 ft



BSMW0005 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW5-out1DGN.aqt
Date: 02/12/09 Time: 15:32:46

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

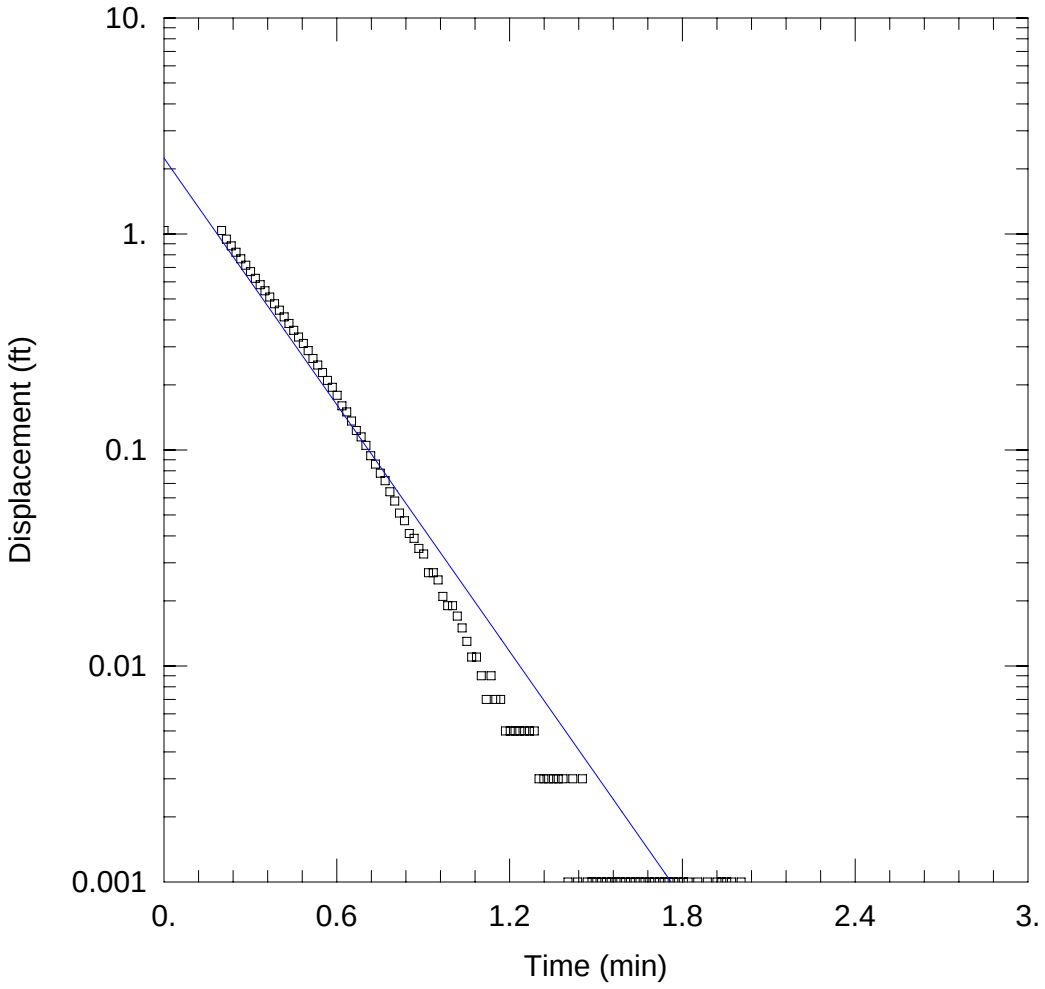
WELL DATA (BSMW0005)

Initial Displacement: 1.037 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 35.77 ft/day y0 = 2.151 ft



BSMW0005 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW5-out1HV.aqt
Date: 02/12/09 Time: 15:33:09

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

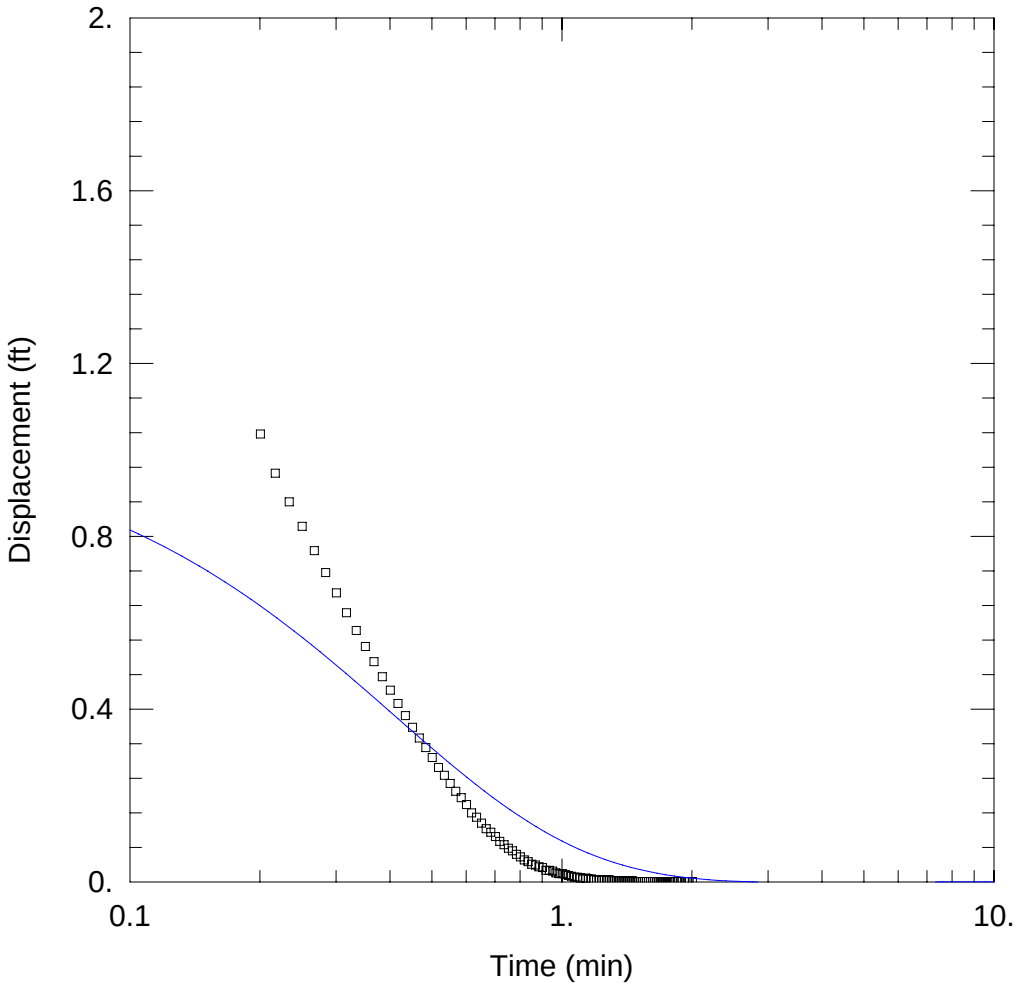
Saturated Thickness: 39.57 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0005)

Initial Displacement: 1.037 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 46.44 ft/day
y0 = 2.244 ft



BSMW0005 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW5-out1KGS.aqt
Date: 02/12/09 Time: 15:34:00

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft

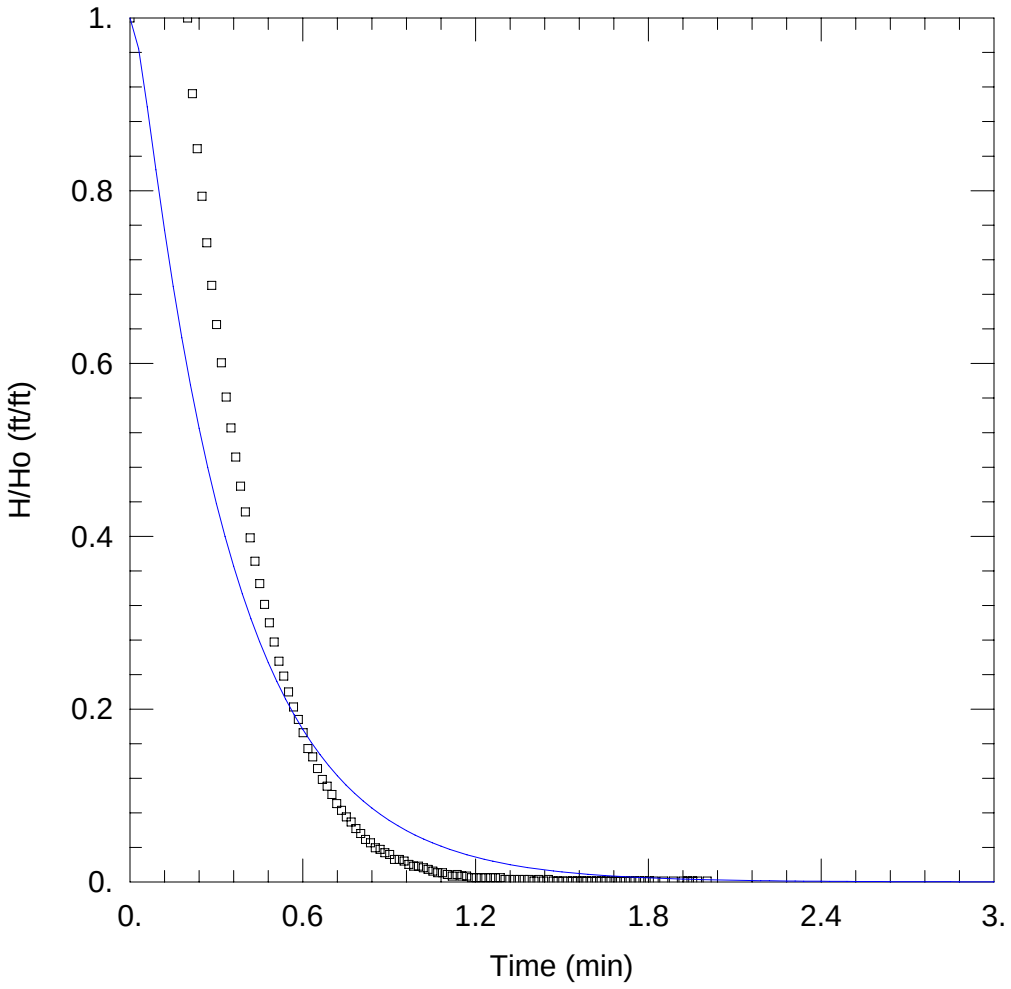
WELL DATA (BSMW0005)

Initial Displacement: 1.037 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 2.692 ft/day
Kz/Kr = 1.
Ss = 2.527E-12 ft^{-1}



BSMW0005 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW5-out1SG.aqt
Date: 02/12/09 Time: 15:34:33

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

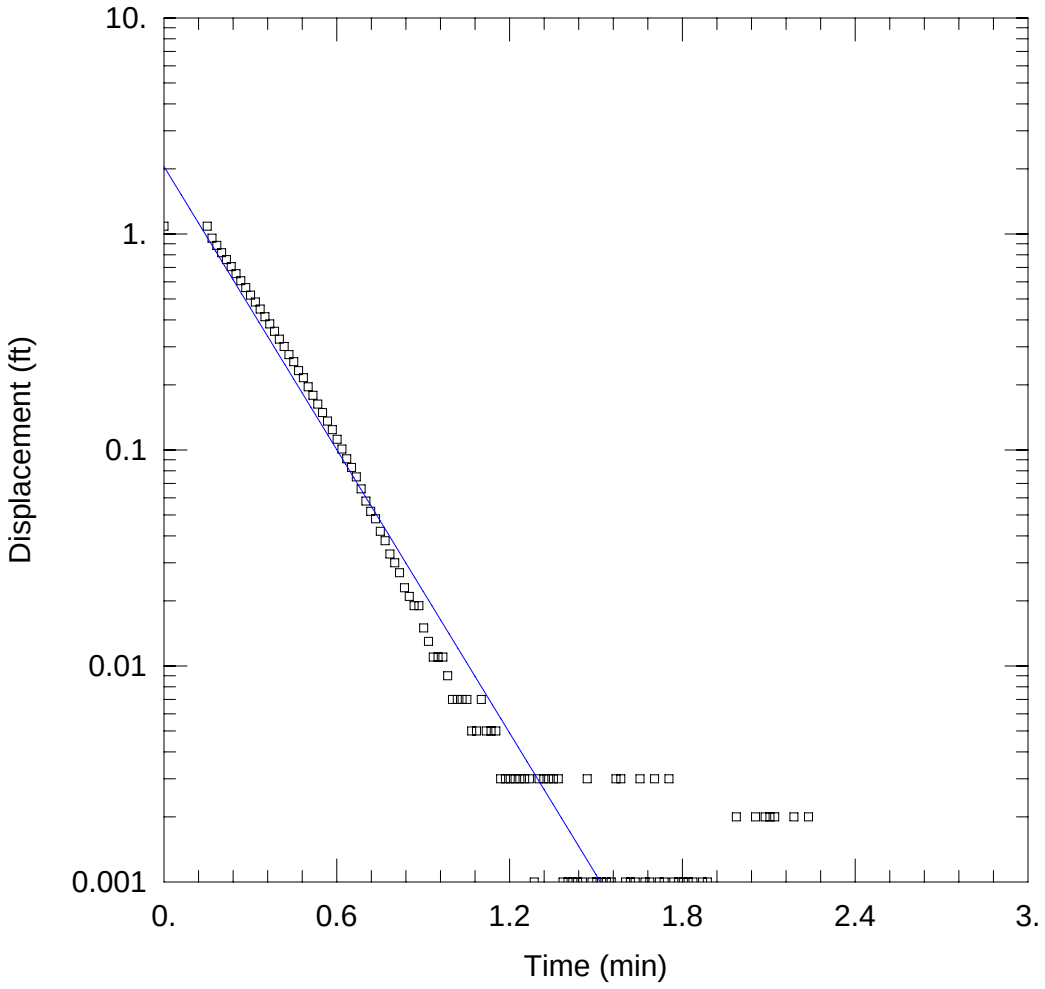
WELL DATA (BSMW0005)

Initial Displacement: 1.037 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 2.693 ft/day Le = 1000. ft



BSMW0005 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW5-out2BR.aqt
Date: 02/12/09 Time: 15:34:56

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

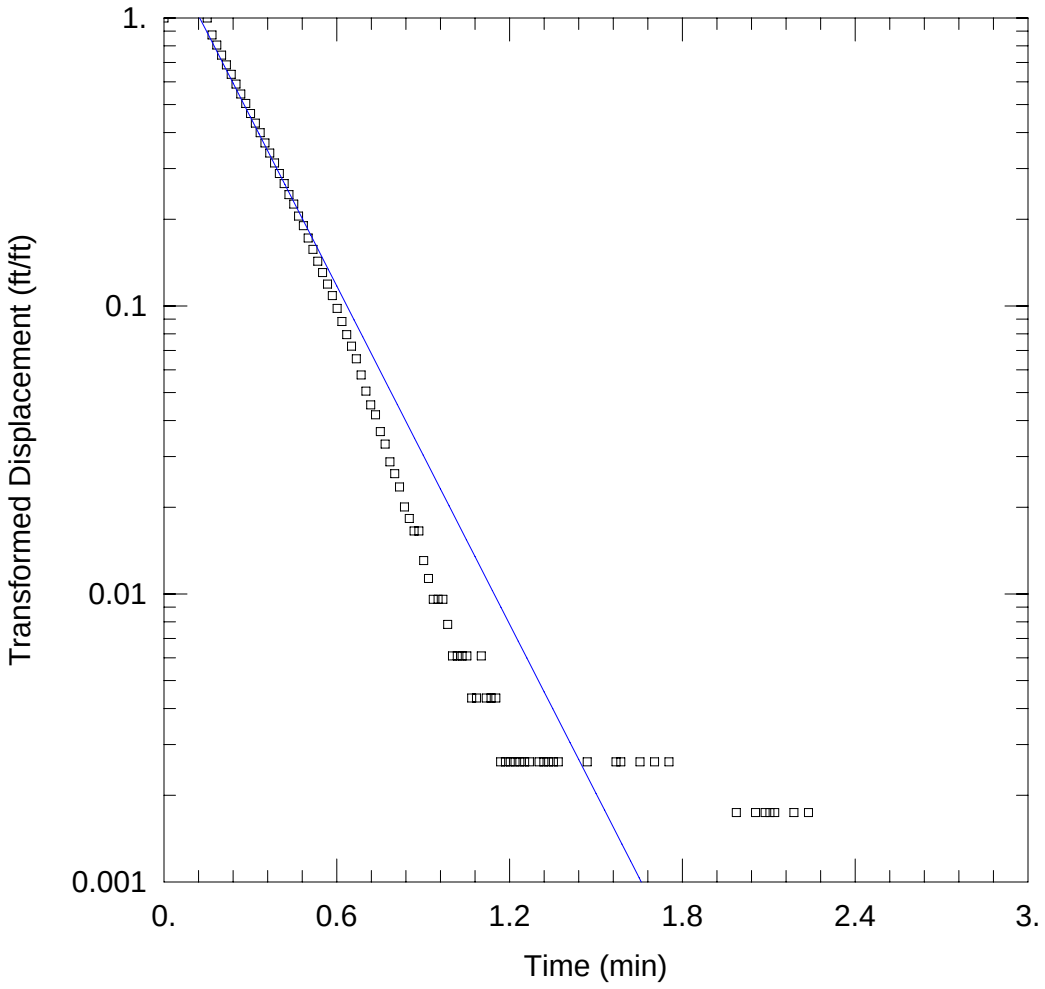
Saturated Thickness: 39.57 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0005)

Initial Displacement: 1.087 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 33.55 ft/day
y0 = 2.052 ft



BSMW0005 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW5-out2DGN.aqt
Date: 02/12/09 Time: 15:35:21

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

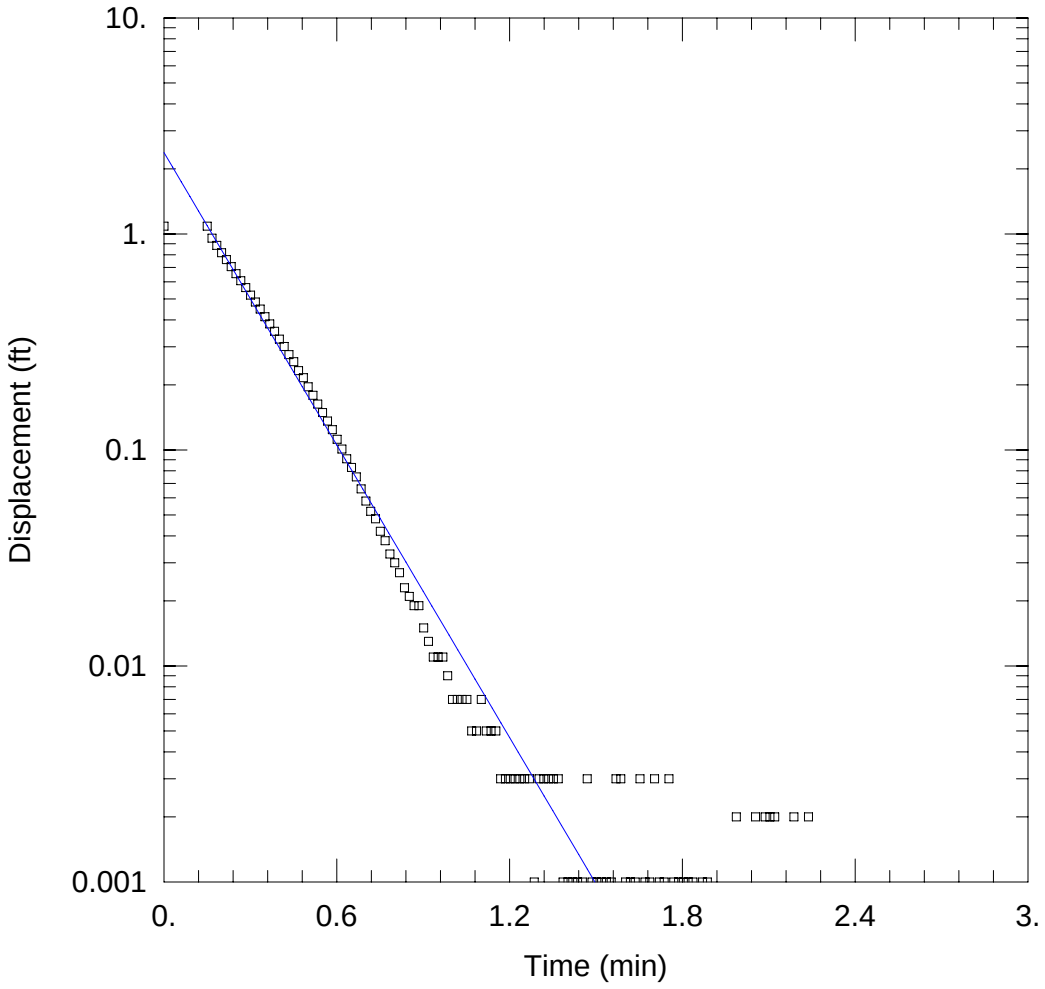
WELL DATA (BSMW0005)

Initial Displacement: 1.087 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 36.21 ft/day y0 = 1.828 ft



BSMW0005 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW5-out2HV.aqt
Date: 02/12/09 Time: 15:35:51

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

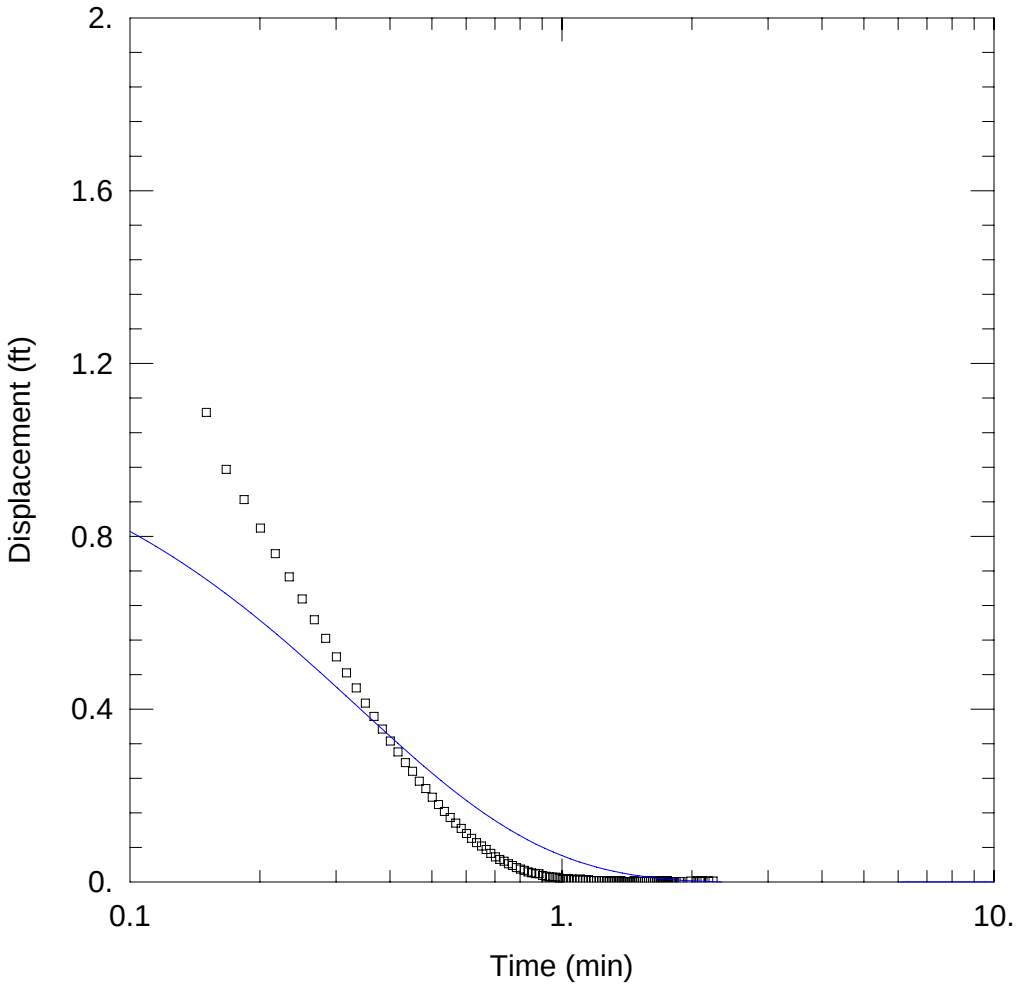
Saturated Thickness: 39.57 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0005)

Initial Displacement: 1.087 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 55.07 ft/day
y0 = 2.38 ft



BSMW0005 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW5-out2KGS.aqt
Date: 02/12/09 Time: 15:36:24

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft

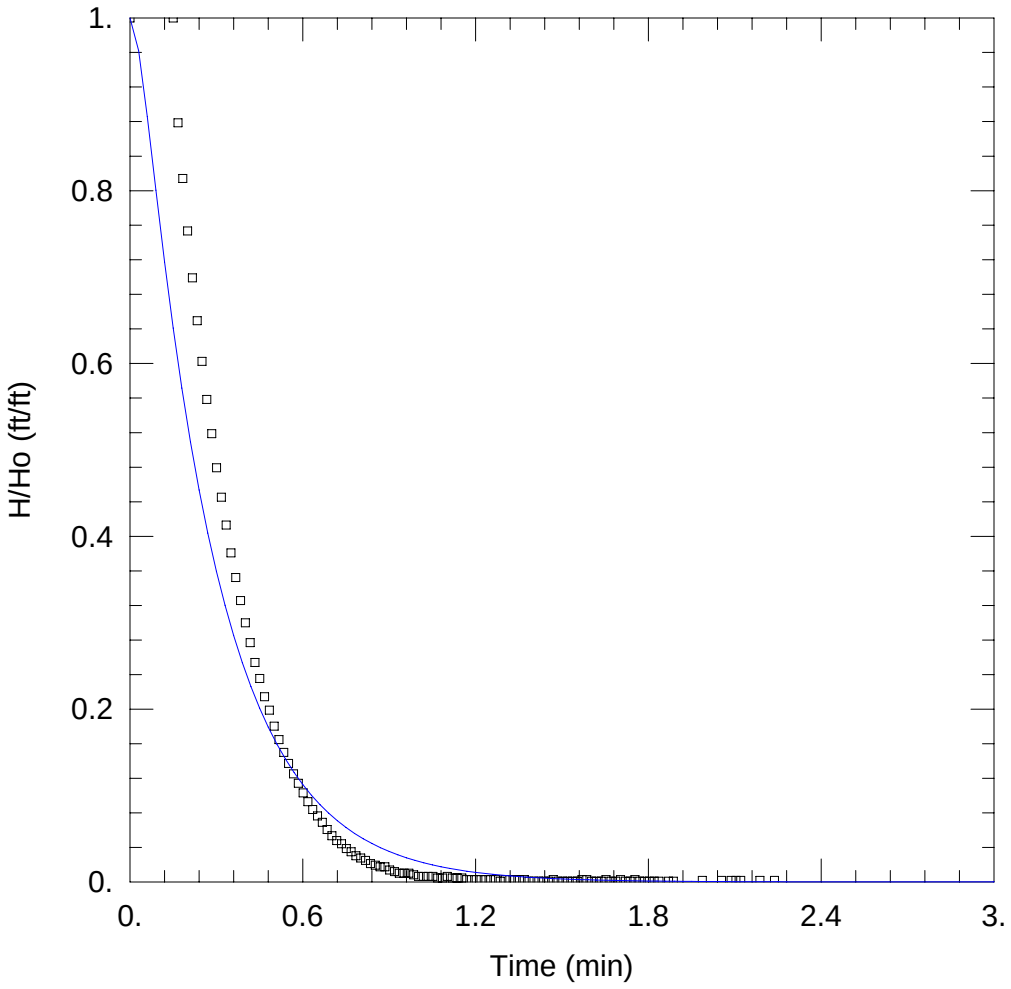
WELL DATA (BSMW0005)

Initial Displacement: 1.087 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 3.258 ft/day
Kz/Kr = 1.
Ss = 2.527E-12 ft^{-1}



BSMW0005 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW5-out2SG.aqt
Date: 02/12/09 Time: 15:36:43

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0005
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 39.57 ft Anisotropy Ratio (Kz/Kr): 1.

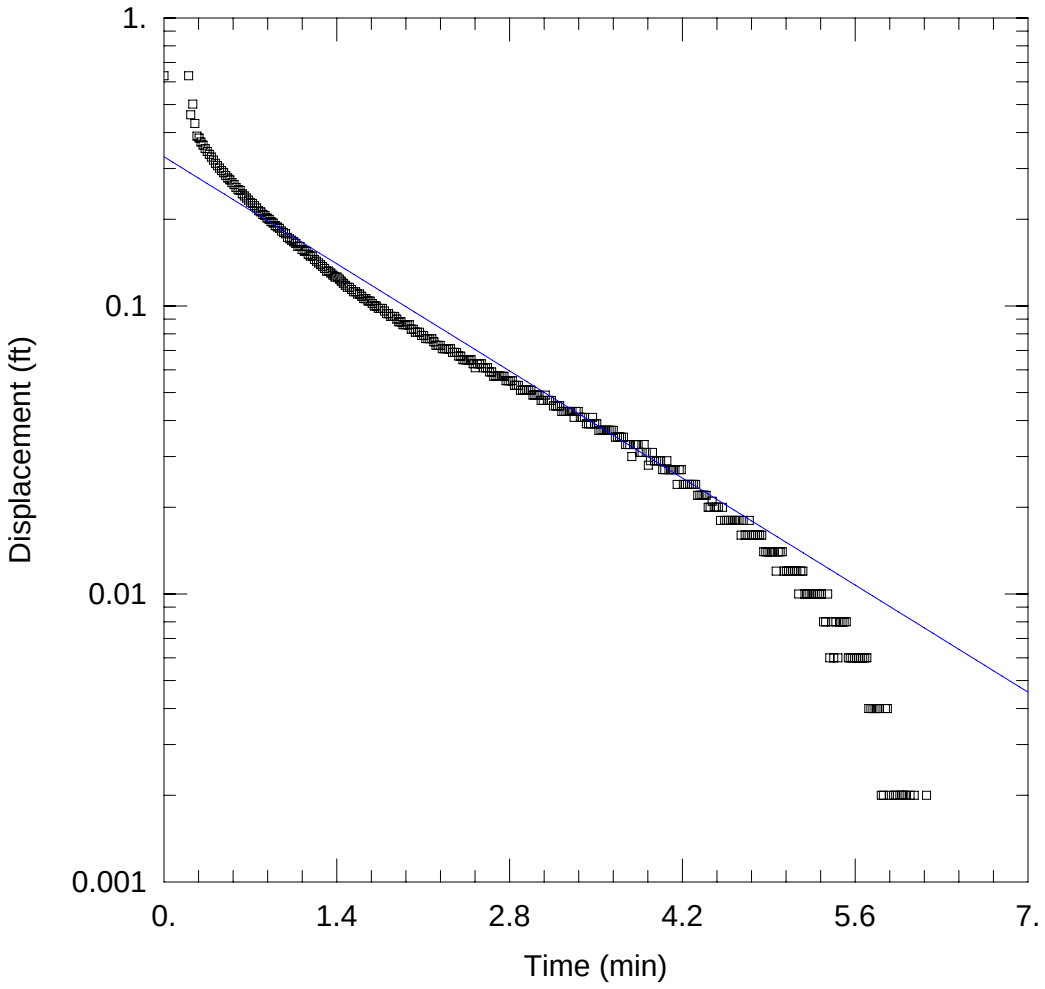
WELL DATA (BSMW0005)

Initial Displacement: 1.087 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 7.57 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 3.29 ft/day Le = 1000. ft



BSMW0006 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW6-in1BR.aqt
Date: 02/12/09 Time: 14:05:35

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft Anisotropy Ratio (Kz/Kr): 1.

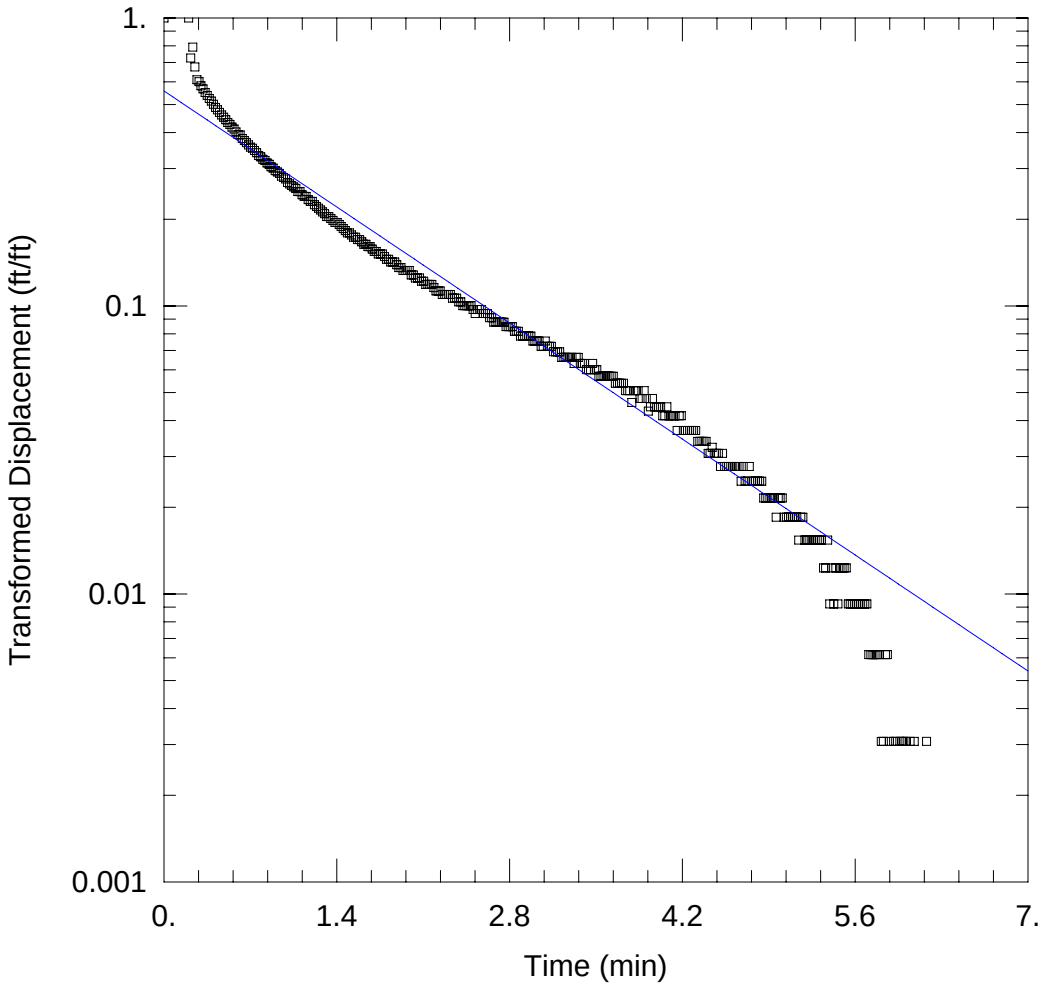
WELL DATA (BSMW0006)

Initial Displacement: 0.63 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.074 ft/day y0 = 0.3296 ft



BSMW0006 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW6-in1DGN.aqt
Date: 02/12/09 Time: 14:06:01

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft Anisotropy Ratio (Kz/Kr): 1.

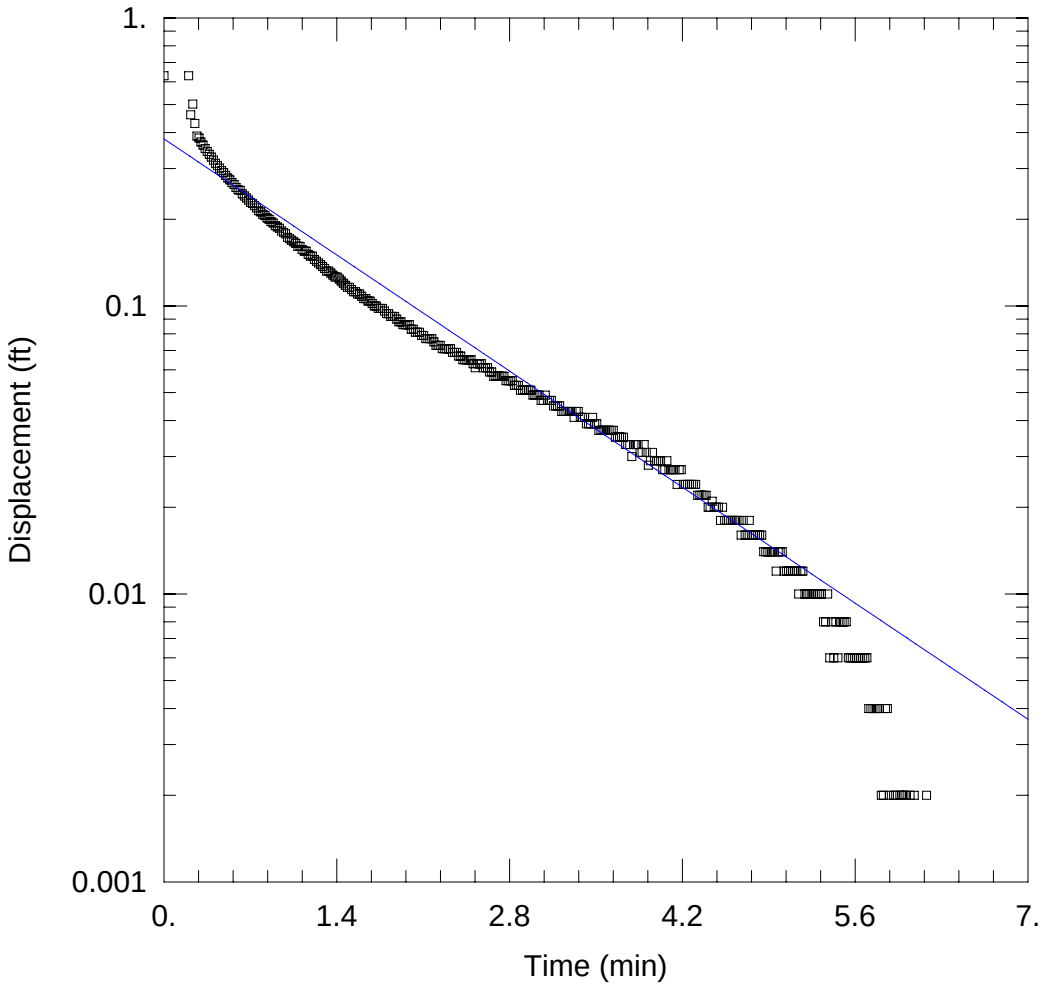
WELL DATA (BSMW0006)

Initial Displacement: 0.63 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 5.323 ft/day y0 = 0.3563 ft



BSMW0006 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW6-in1HV.aqt
Date: 02/12/09 Time: 14:06:28

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft Anisotropy Ratio (Kz/Kr): 1.

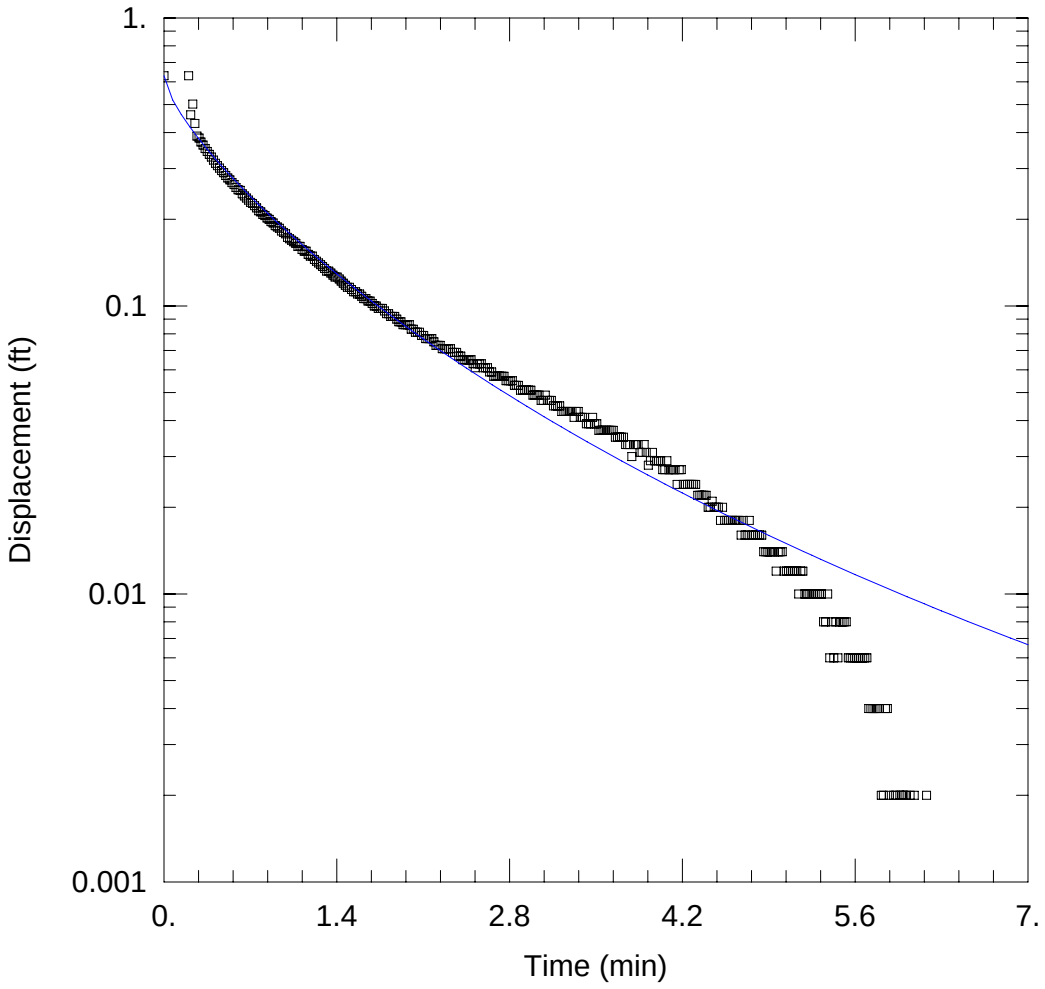
WELL DATA (BSMW0006)

Initial Displacement: 0.63 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 7.026 ft/day y0 = 0.3801 ft



BSMW0006 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW6-in1KGS.aqt
Date: 02/12/09 Time: 14:06:57

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft

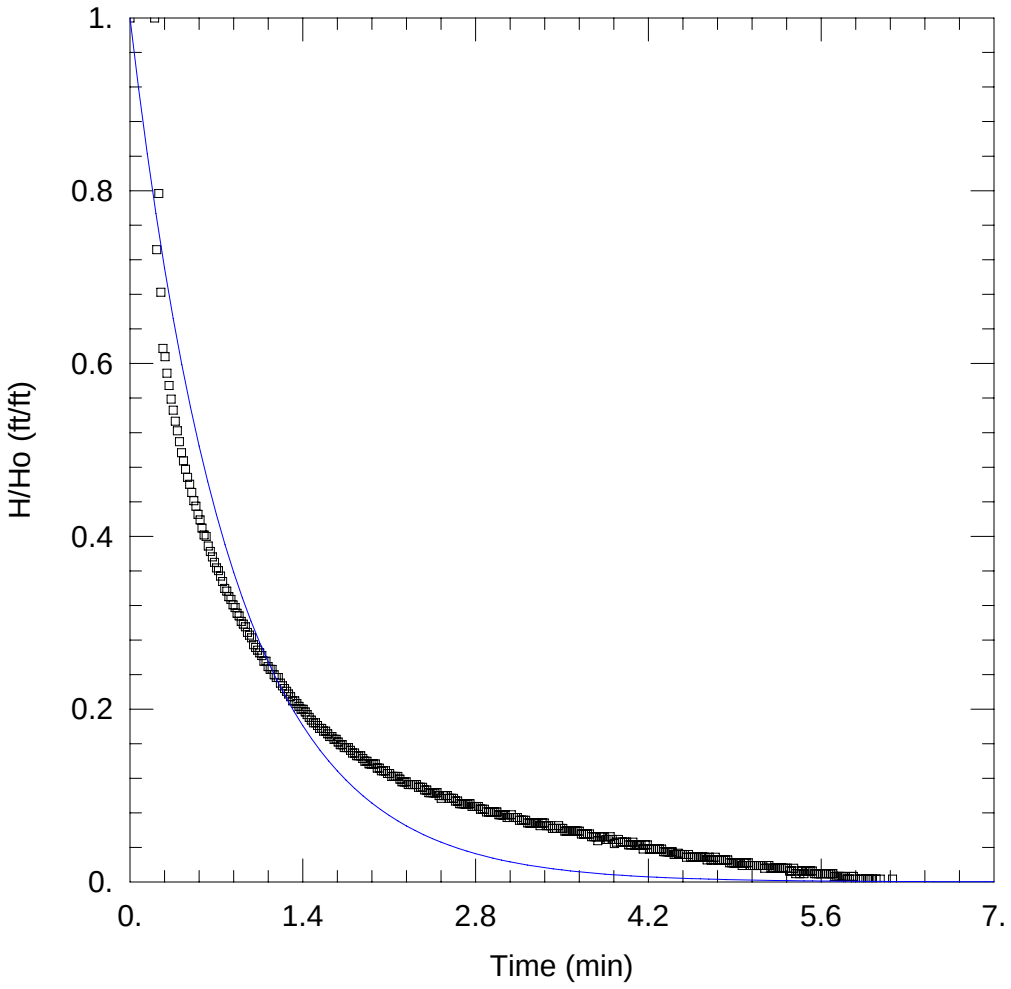
WELL DATA (BSMW0006)

Initial Displacement: 0.63 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 1.155 ft/day
Kz/Kr = 1.
Ss = 0.0001537 ft^{-1}



BSMW0006 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW6-in1SG.aqt
Date: 02/12/09 Time: 14:07:31

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft Anisotropy Ratio (Kz/Kr): 1.

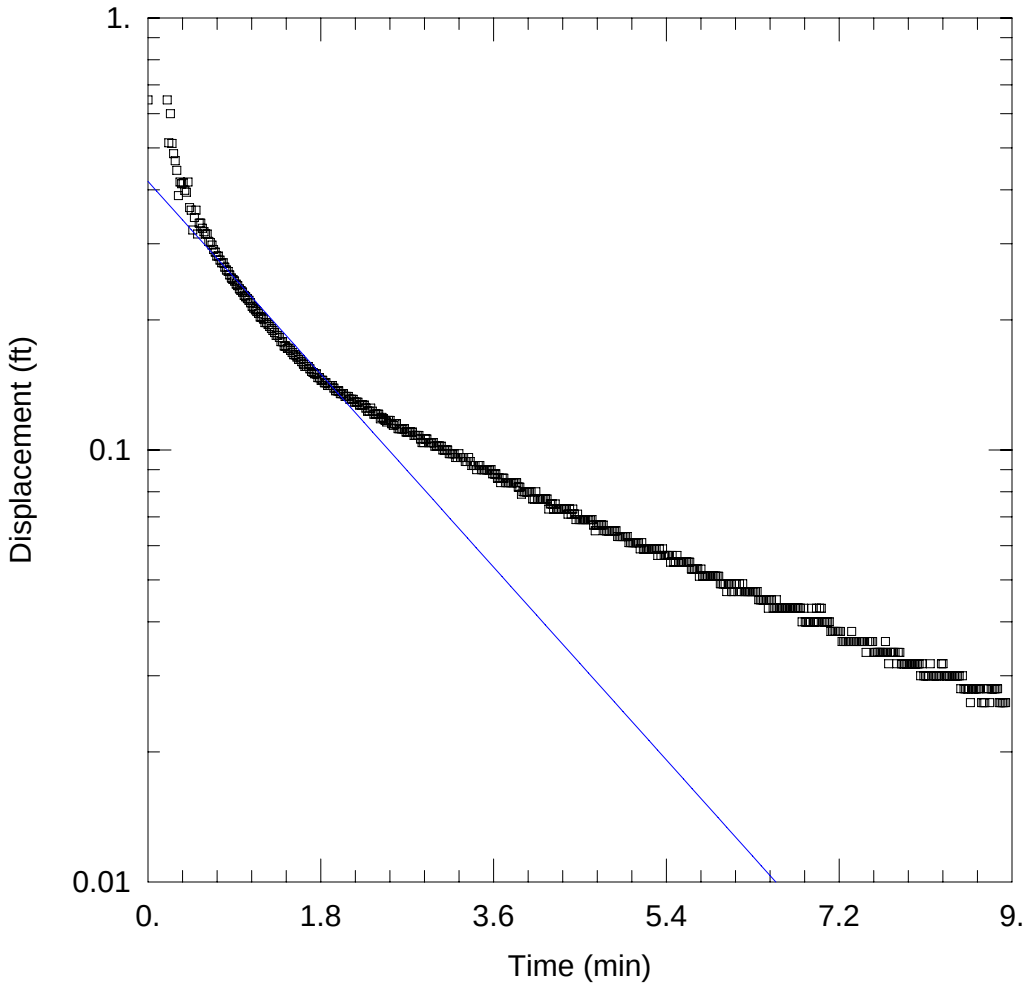
WELL DATA (BSMW0006)

Initial Displacement: 0.63 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 1.172 ft/day Le = 0.1 ft



BSMW0006 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW6-in2BR.aqt
Date: 02/12/09 Time: 14:08:31

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

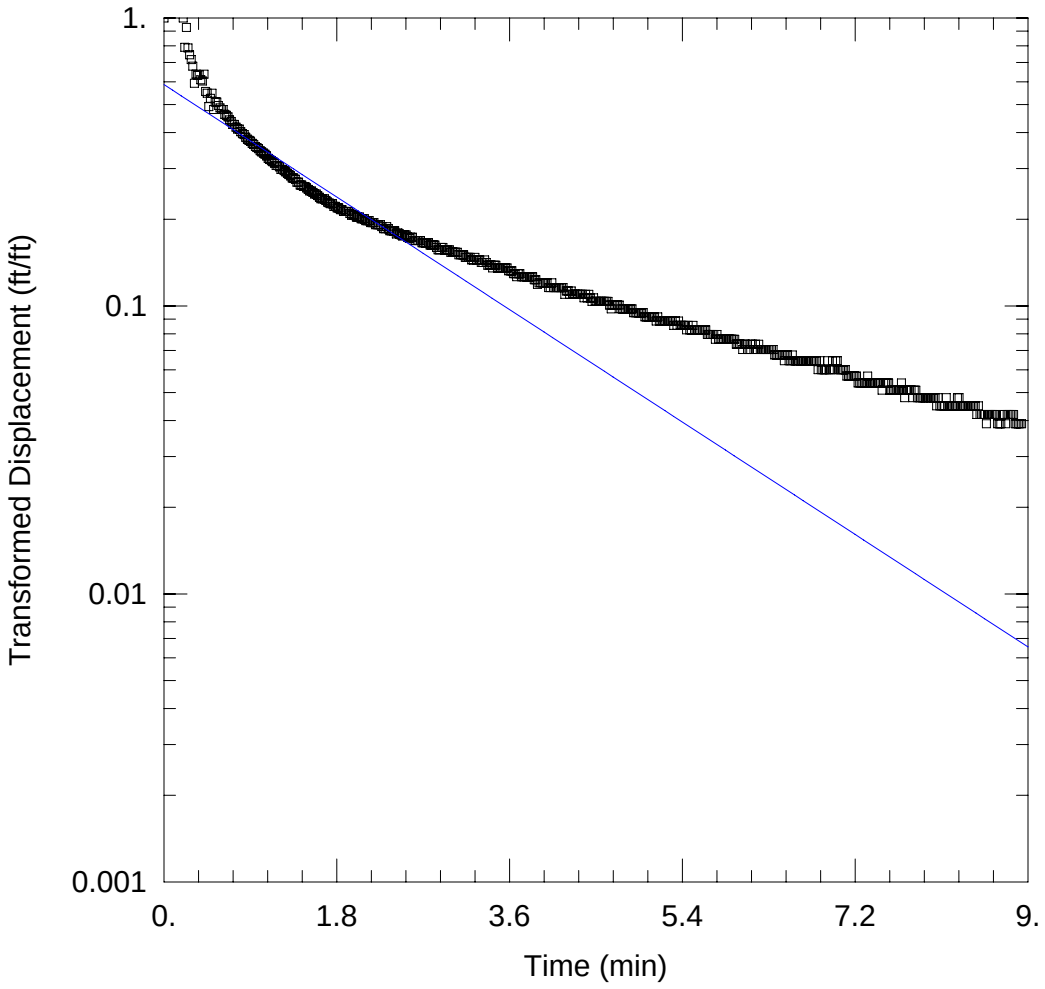
Saturated Thickness: 40.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0006)

Initial Displacement: 0.646 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.803 ft/day
y0 = 0.4183 ft



BSMW0006 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW6-in2DGN.aqt
Date: 02/12/09 Time: 14:09:02

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft Anisotropy Ratio (Kz/Kr): 1.

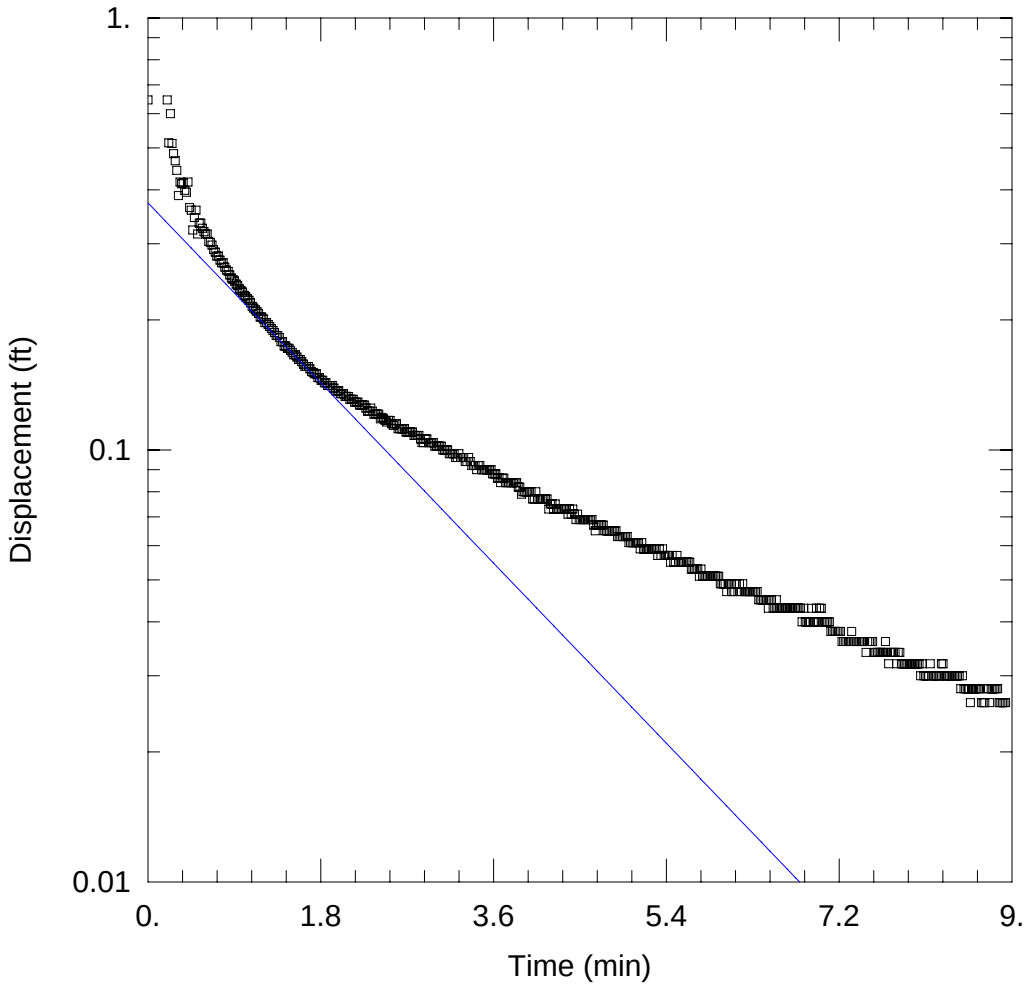
WELL DATA (BSMW0006)

Initial Displacement: 0.646 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 4.013 ft/day y0 = 0.3841 ft



BSMW0006 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW6-in2HV.aqt
Date: 02/12/09 Time: 14:09:30

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

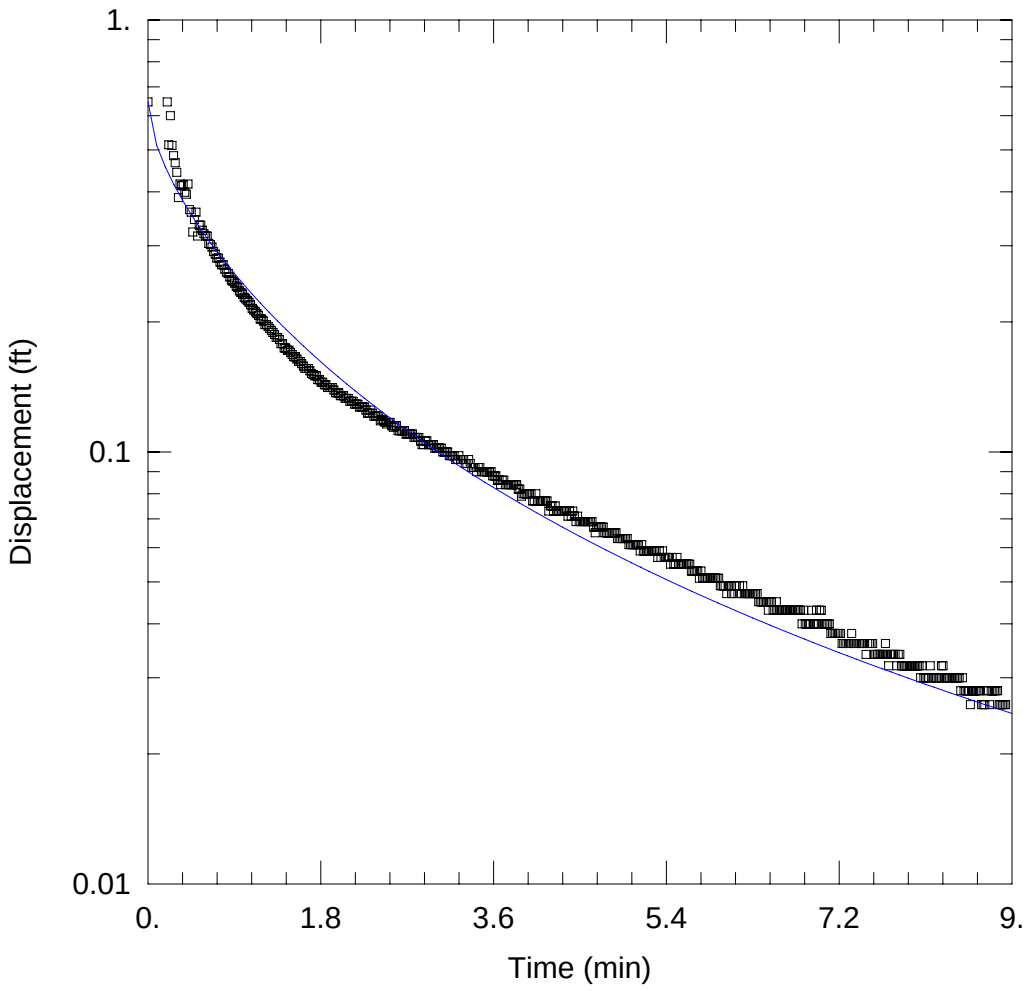
Saturated Thickness: 40.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0006)

Initial Displacement: 0.646 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 5.65 ft/day
y0 = 0.373 ft



BSMW0006 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW6-in2KGS.aqt
Date: 02/12/09 Time: 14:10:05

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft

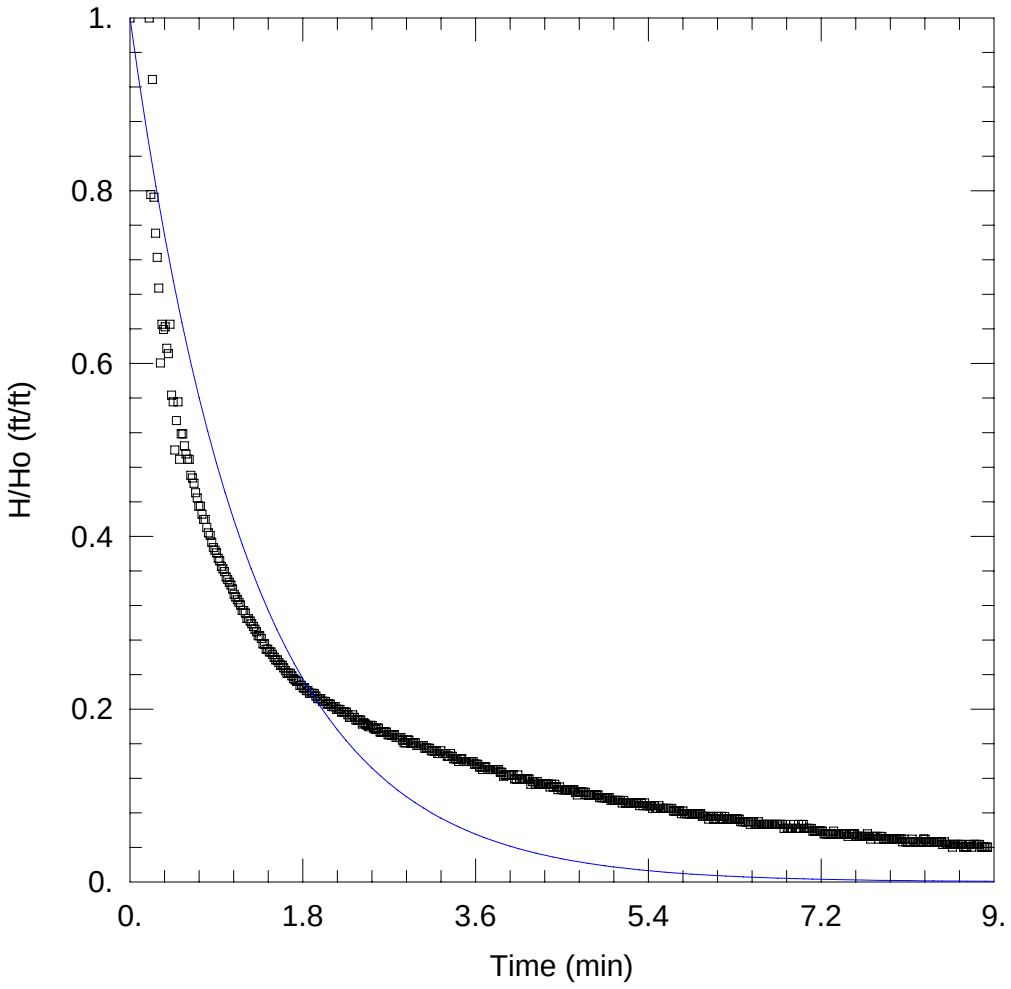
WELL DATA (BSMW0006)

Initial Displacement: 0.646 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.5765 ft/day
Kz/Kr = 1.
Ss = 0.0005911 ft^{-1}



BSMW0006 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW6-in2SG.aqt
Date: 02/12/09 Time: 14:10:40

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

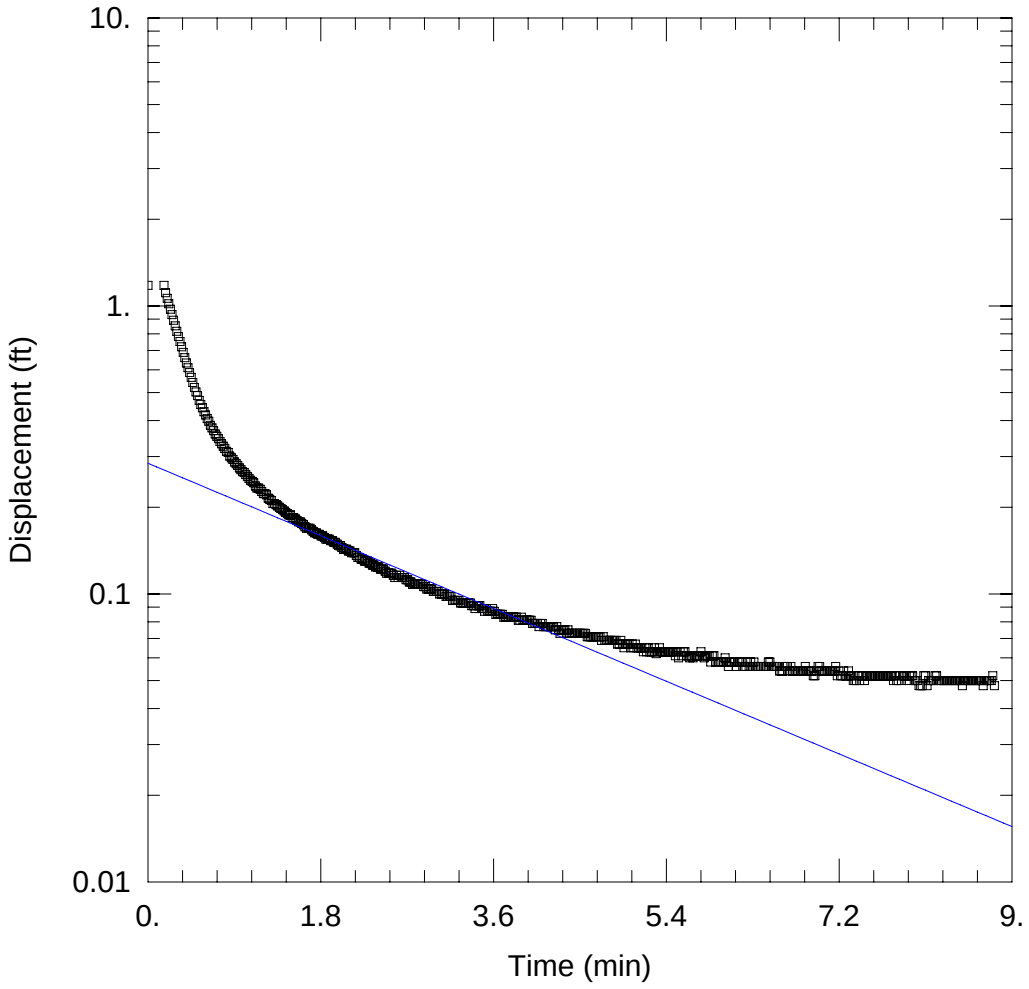
Saturated Thickness: 40.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0006)

Initial Displacement: 0.646 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 0.7714 ft/day
Le = 0.1 ft



BSMW0006 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW6-out1BR.aqt
Date: 02/12/09 Time: 15:37:30

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williamns
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

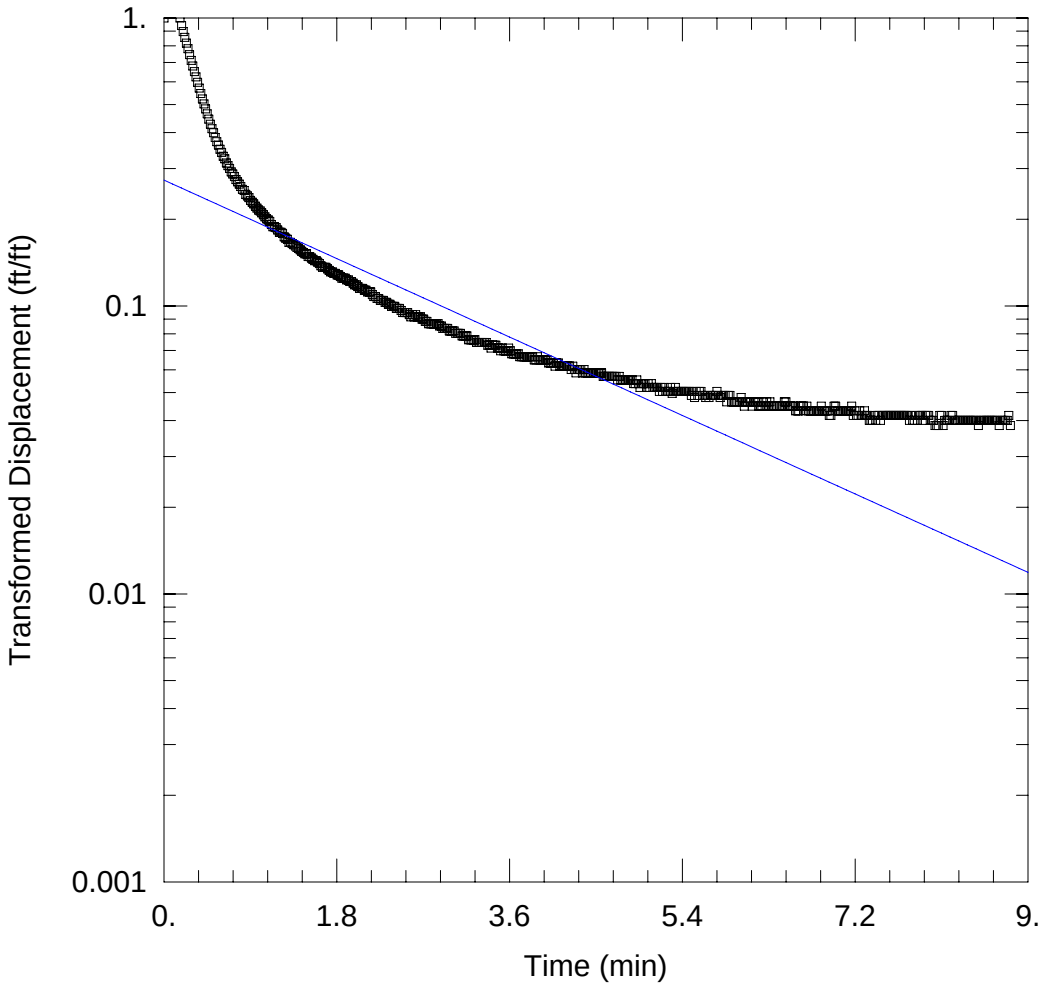
Saturated Thickness: 40.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0006)

Initial Displacement: 1.178 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.15 ft/day
y0 = 0.2842 ft



BSMW0006 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW6-out1DGN.aqt
Date: 02/12/09 Time: 15:37:52

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williamns
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft Anisotropy Ratio (Kz/Kr): 1.

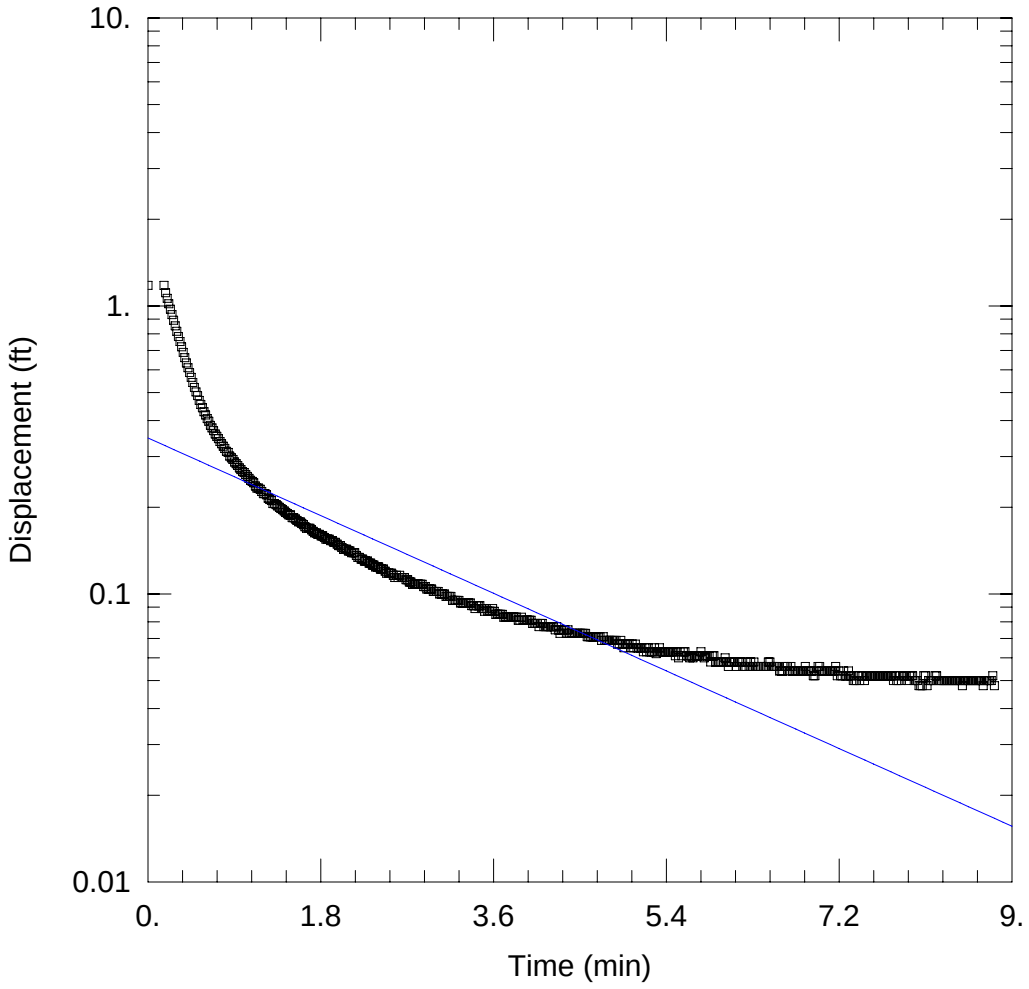
WELL DATA (BSMW0006)

Initial Displacement: 1.178 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 2.799 ft/day y0 = 0.3364 ft



BSMW0006 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW6-out1HV.aqt
Date: 02/12/09 Time: 15:38:18

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williamns
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

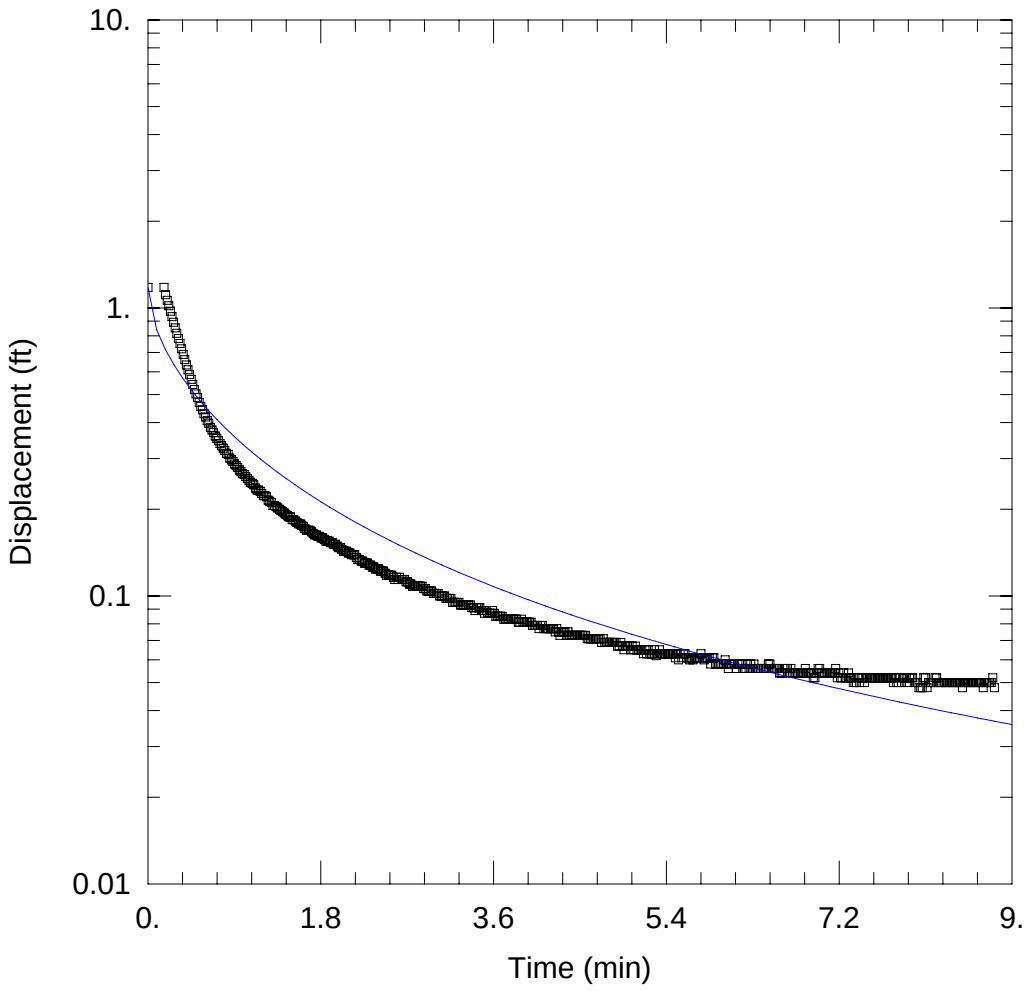
Saturated Thickness: 40.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0006)

Initial Displacement: 1.178 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 3.655 ft/day
y0 = 0.3479 ft



BSMW0006 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW6-out1KGS.aqt
Date: 02/12/09 Time: 15:38:42

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williamns
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft

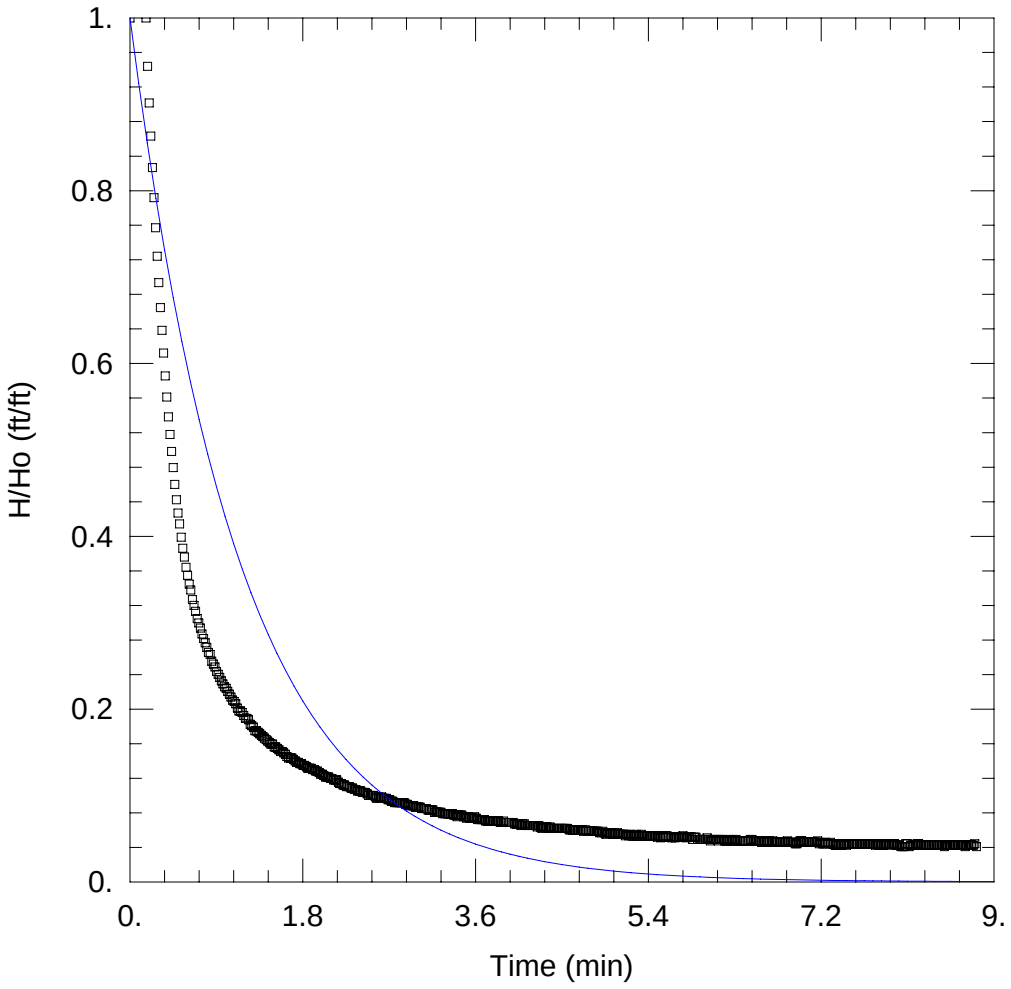
WELL DATA (BSMW0006)

Initial Displacement: 1.178 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.7009 ft/day
Kz/Kr = 1.
Ss = 0.001235 ft^{-1}



BSMW0006 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW6-out1SG.aqt
Date: 02/12/09 Time: 15:39:06

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williamns
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

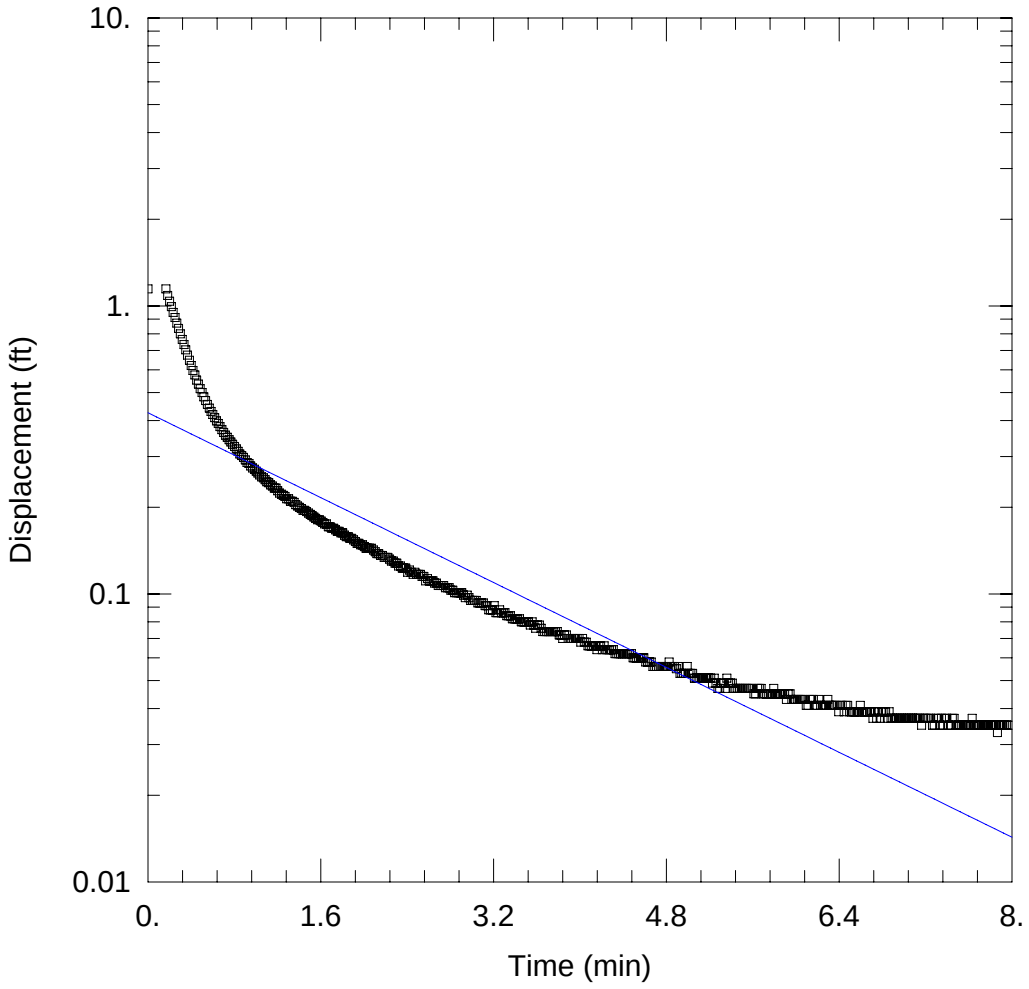
Saturated Thickness: 40.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0006)

Initial Displacement: 1.178 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 0.8332 ft/day
Le = 0.1 ft



BSMW0006 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW6-out2BR.aqt
Date: 02/12/09 Time: 15:39:33

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

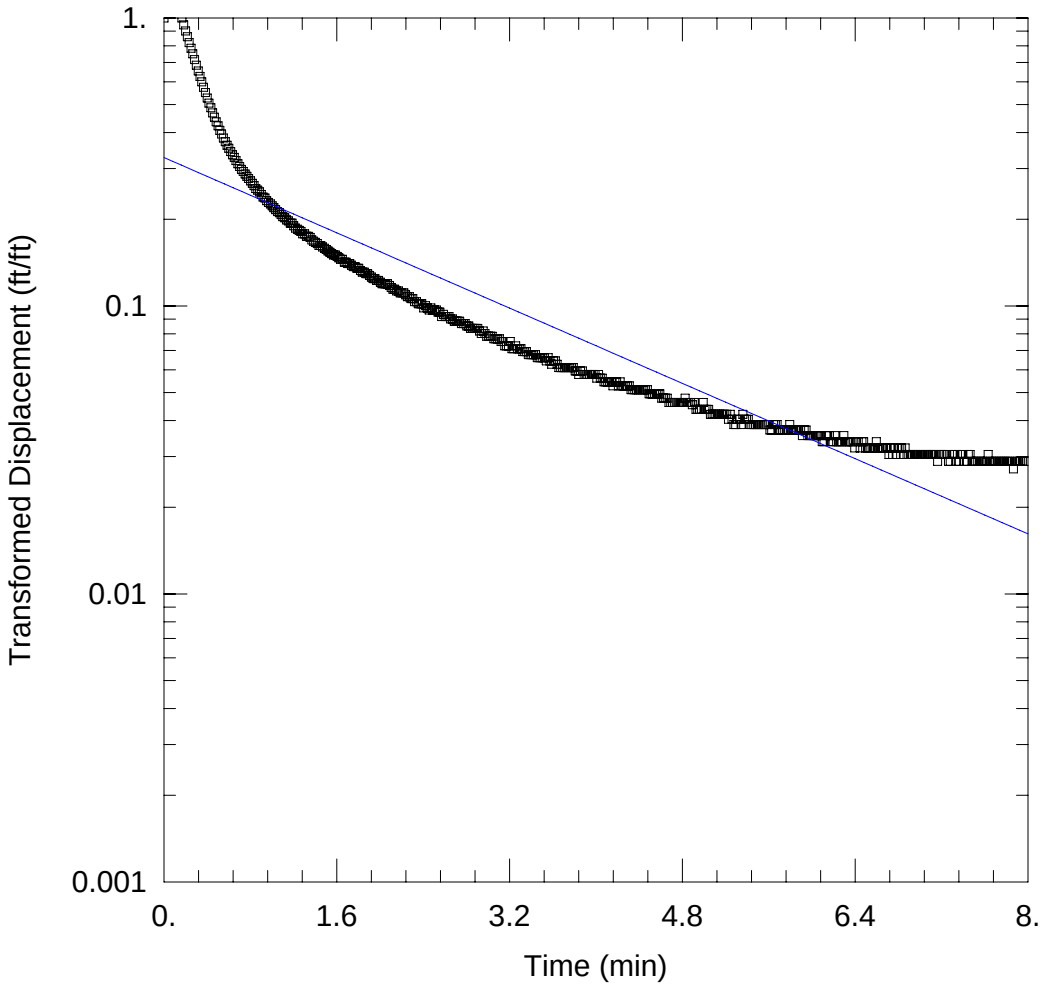
Saturated Thickness: 40.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0006)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.826 ft/day
y0 = 0.4257 ft



BSMW0006 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW6-out2DGN.aqt
Date: 02/12/09 Time: 15:40:02

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft Anisotropy Ratio (Kz/Kr): 1.

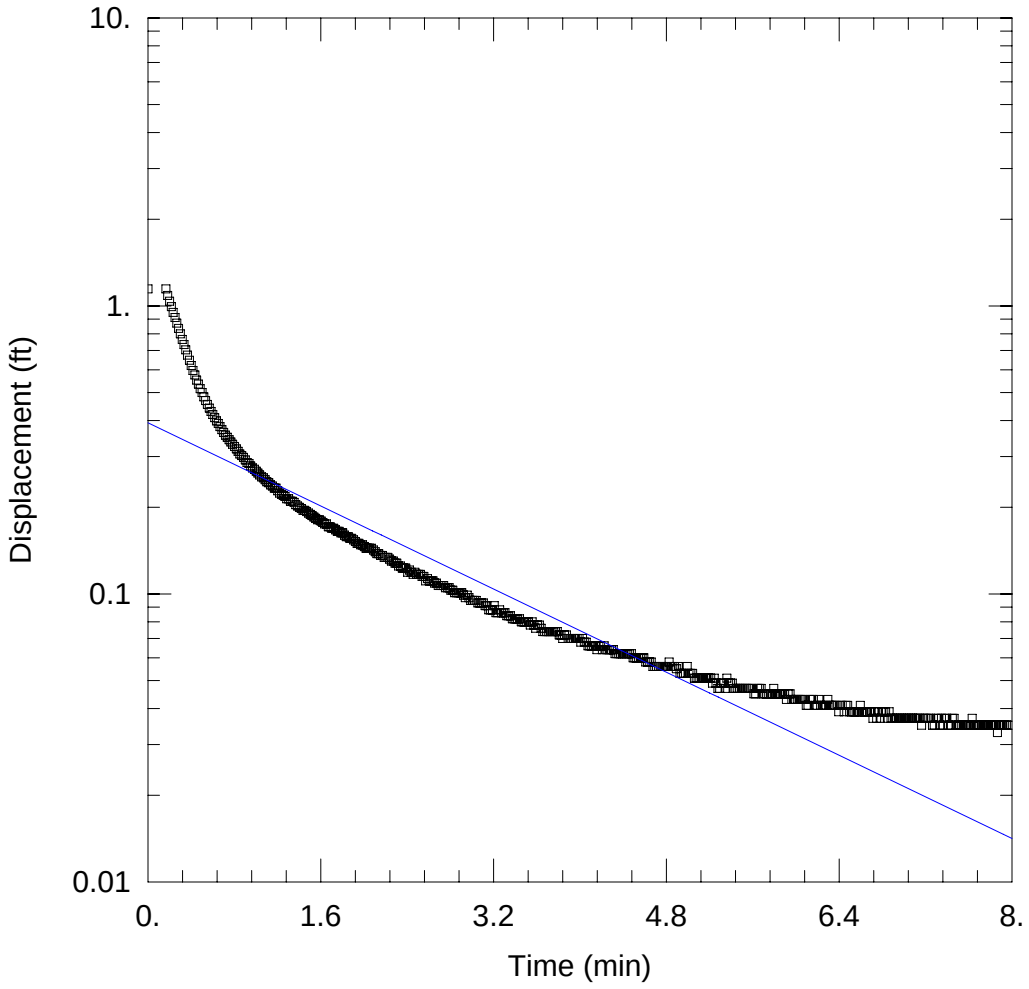
WELL DATA (BSMW0006)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 3.022 ft/day y0 = 0.3902 ft



BSMW0006 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW6-out2HV.aqt
Date: 02/12/09 Time: 15:40:35

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

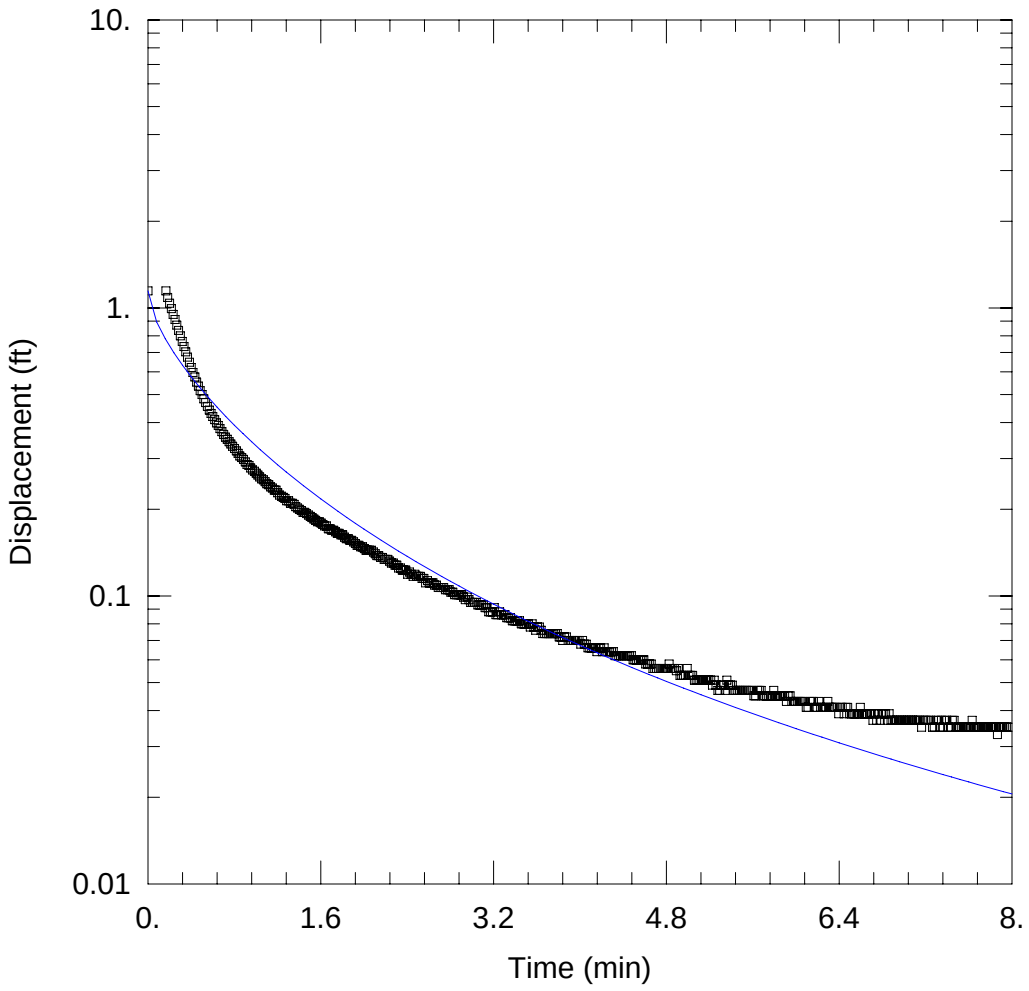
Saturated Thickness: 40.33 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0006)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 4.402 ft/day
y0 = 0.3927 ft



BSMW0006 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW6-out2KGS.aqt
Date: 02/12/09 Time: 15:41:02

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft

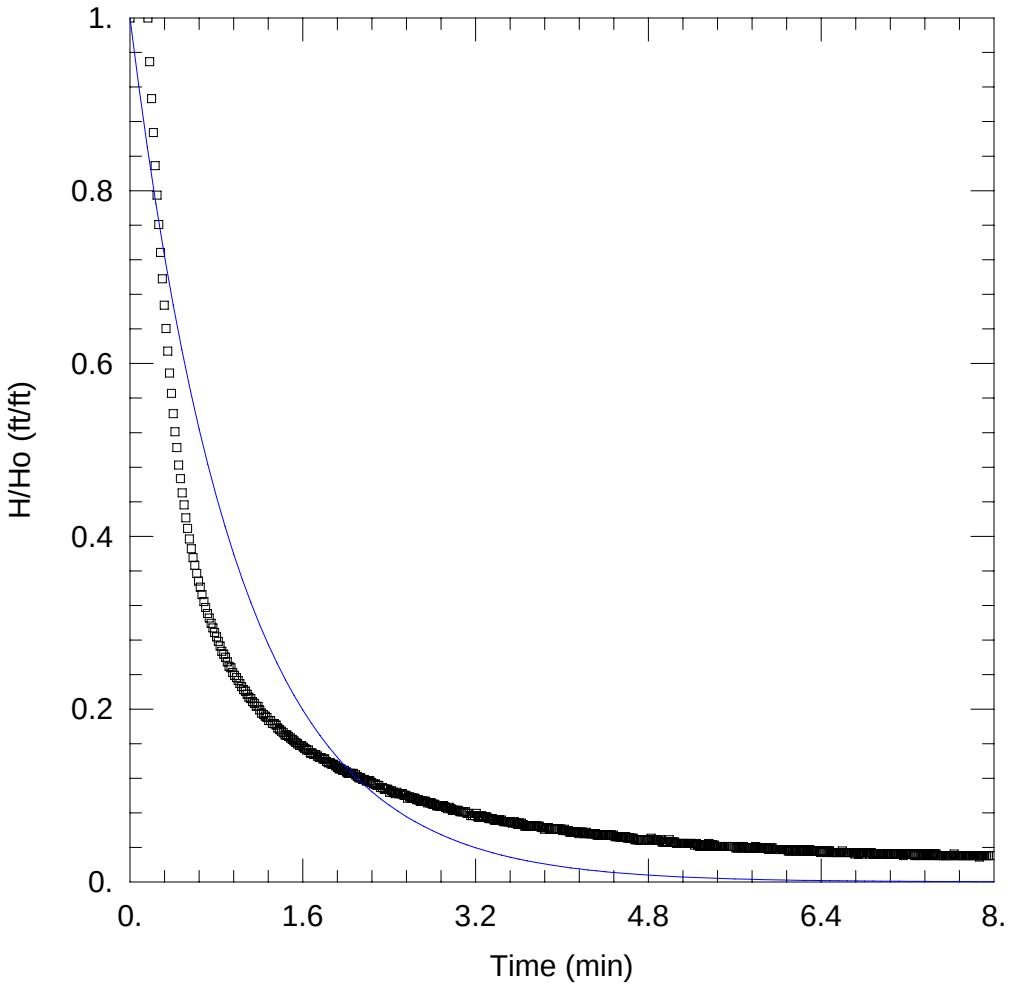
WELL DATA (BSMW0006)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.968 ft/day
Kz/Kr = 1.
Ss = 0.00037 ft^{-1}



BSMW0006 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW6-out2SG.aqt
Date: 02/12/09 Time: 15:41:26

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0006
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 40.33 ft Anisotropy Ratio (Kz/Kr): 1.

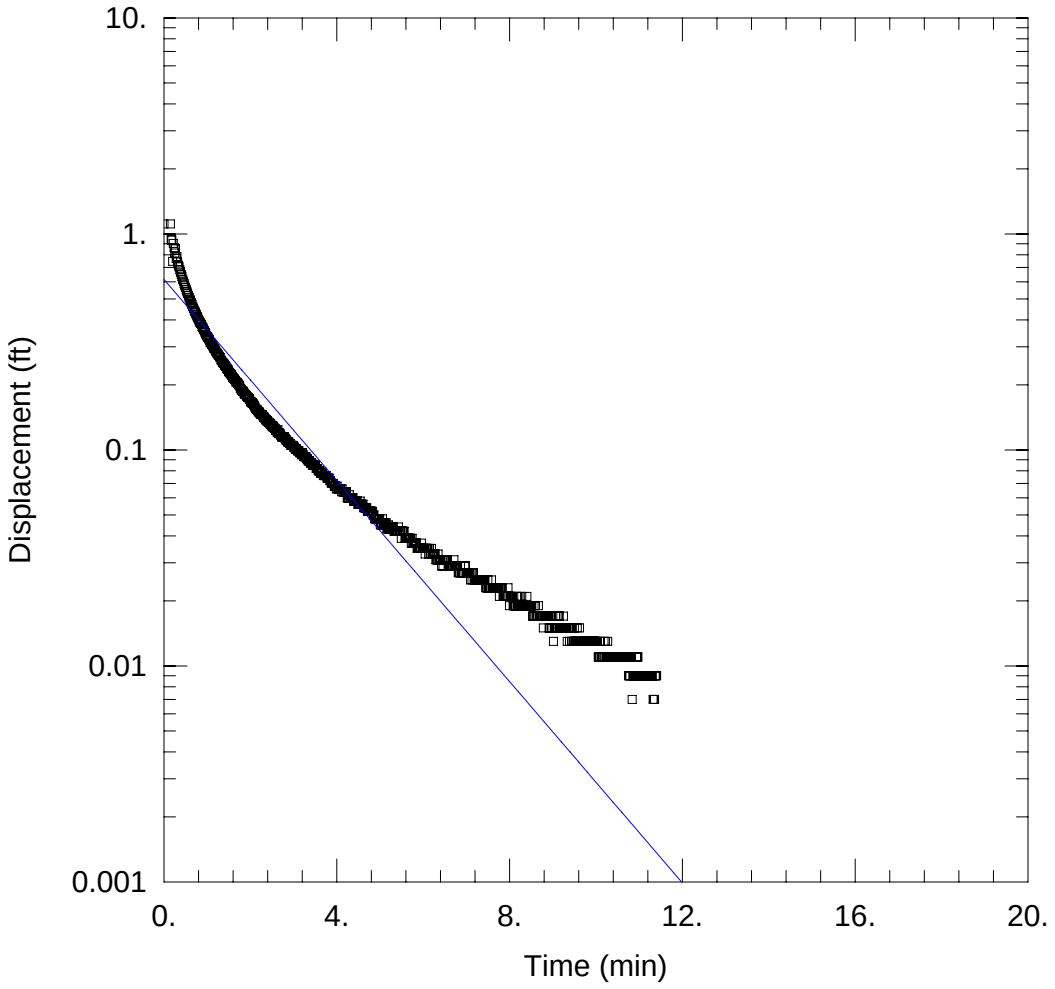
WELL DATA (BSMW0006)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 8.33 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.968 ft/day Le = 0.1 ft



BSMW0007 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW7-in1BR.aqt
Date: 02/12/09 Time: 14:11:08

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

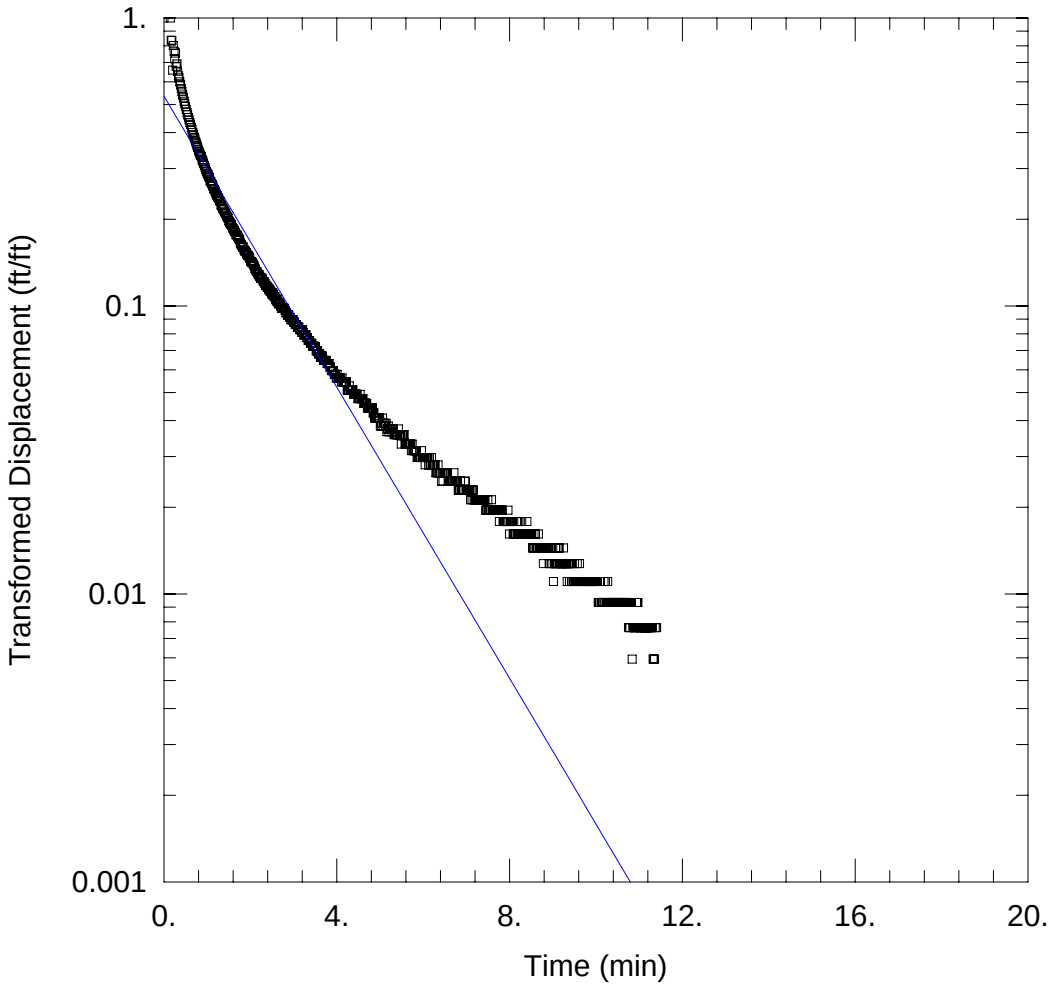
WELL DATA (BSMW0007)

Initial Displacement: 1.113 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.575 ft/day y0 = 0.6155 ft



BSMW0007 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW7-in1DGN.aqt
Date: 02/12/09 Time: 14:11:33

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

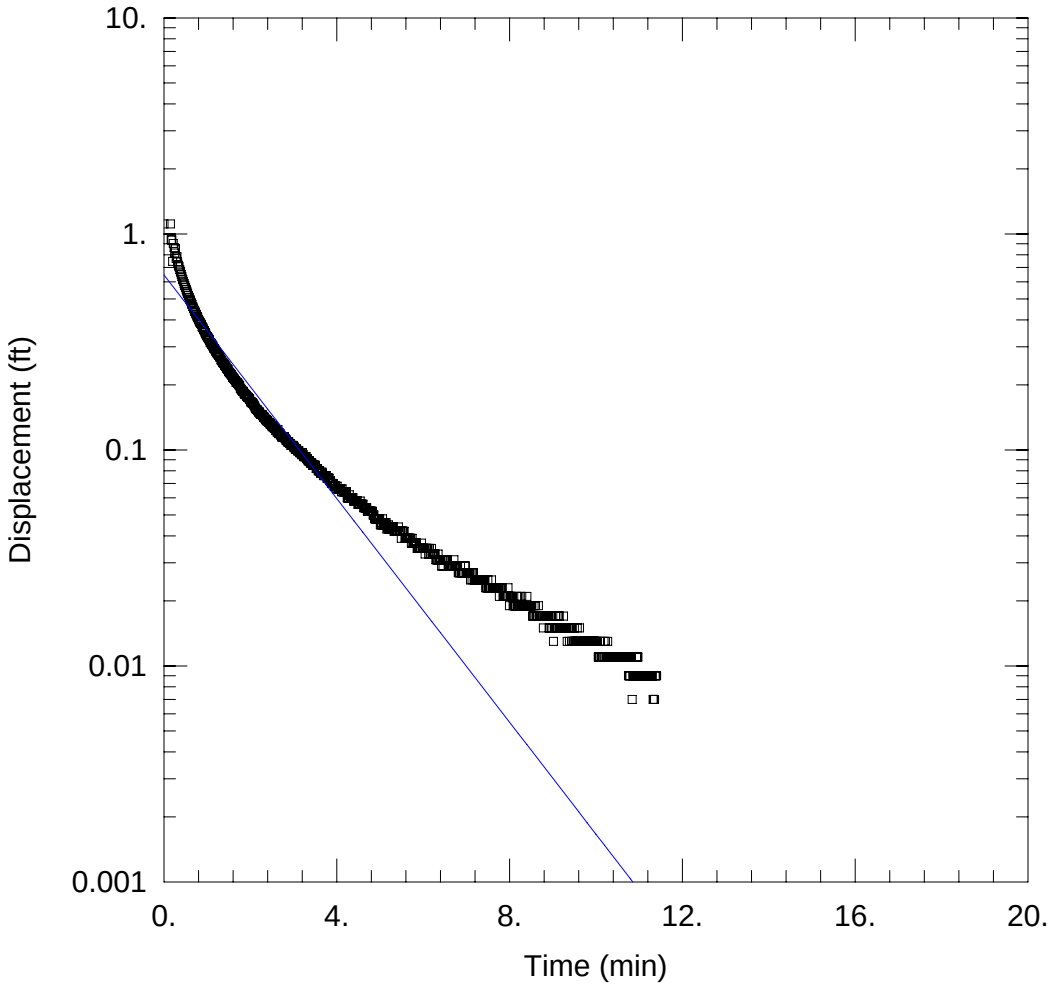
WELL DATA (BSMW0007)

Initial Displacement: 1.113 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 4.676 ft/day y0 = 0.611 ft



BSMW0007 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW7-in1HV.aqt
Date: 02/12/09 Time: 14:12:14

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

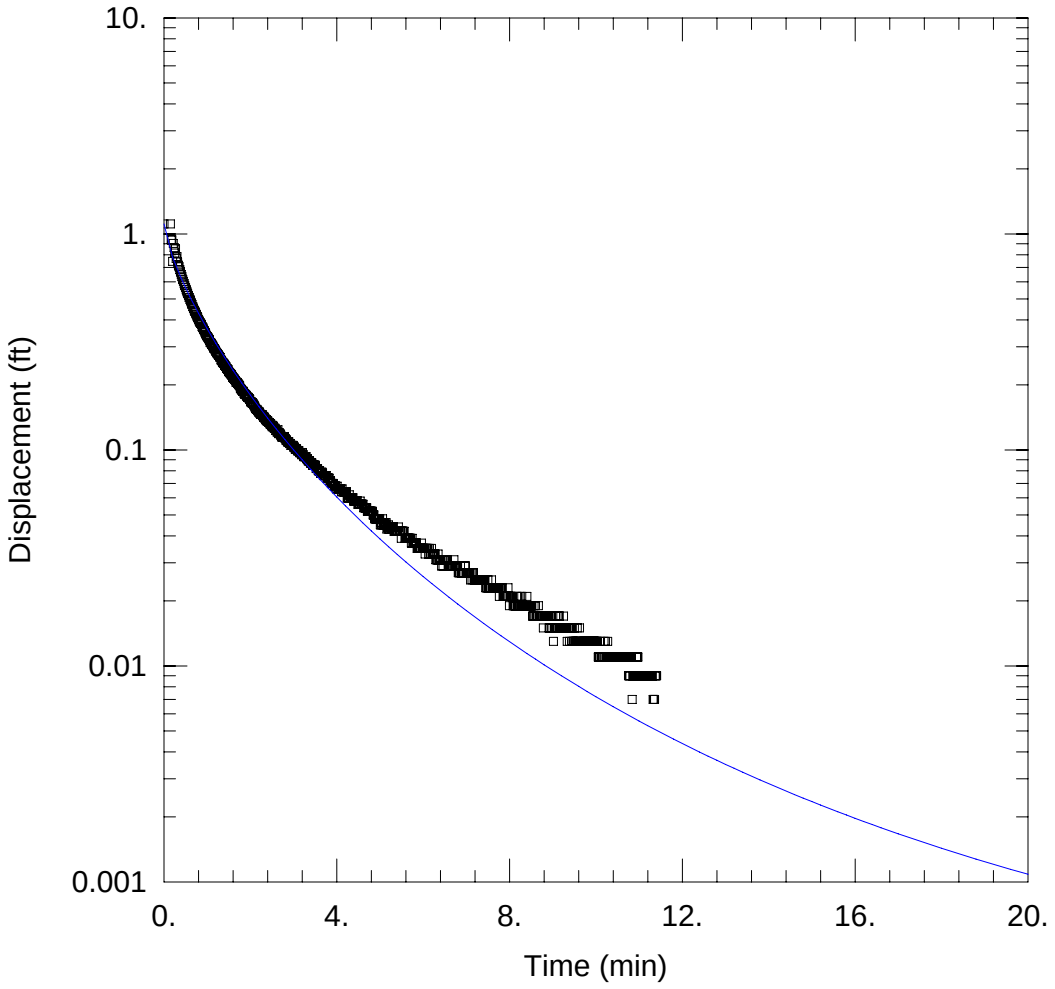
WELL DATA (BSMW0007)

Initial Displacement: 1.113 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 6.317 ft/day y0 = 0.6458 ft



BSMW0007 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW7-in1KGS.aqt
Date: 02/12/09 Time: 14:12:49

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft

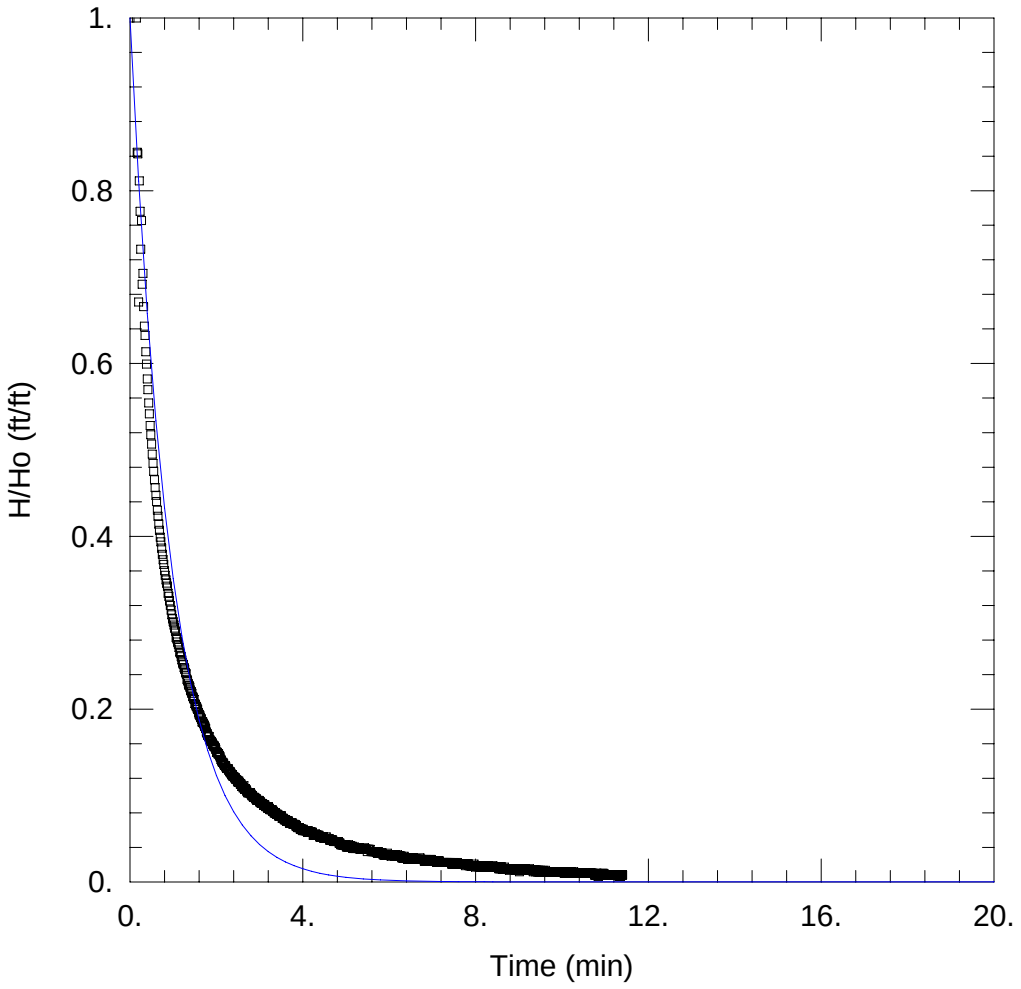
WELL DATA (BSMW0007)

Initial Displacement: 1.113 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.9858 ft/day
Kz/Kr = 1.
Ss = 0.0001615 ft^{-1}



BSMW0007 - FALLING HEAD TRIAL 1

Data Set: L:\...\BSMW7-in1SG.aqt
Date: 02/12/09 Time: 14:13:39

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

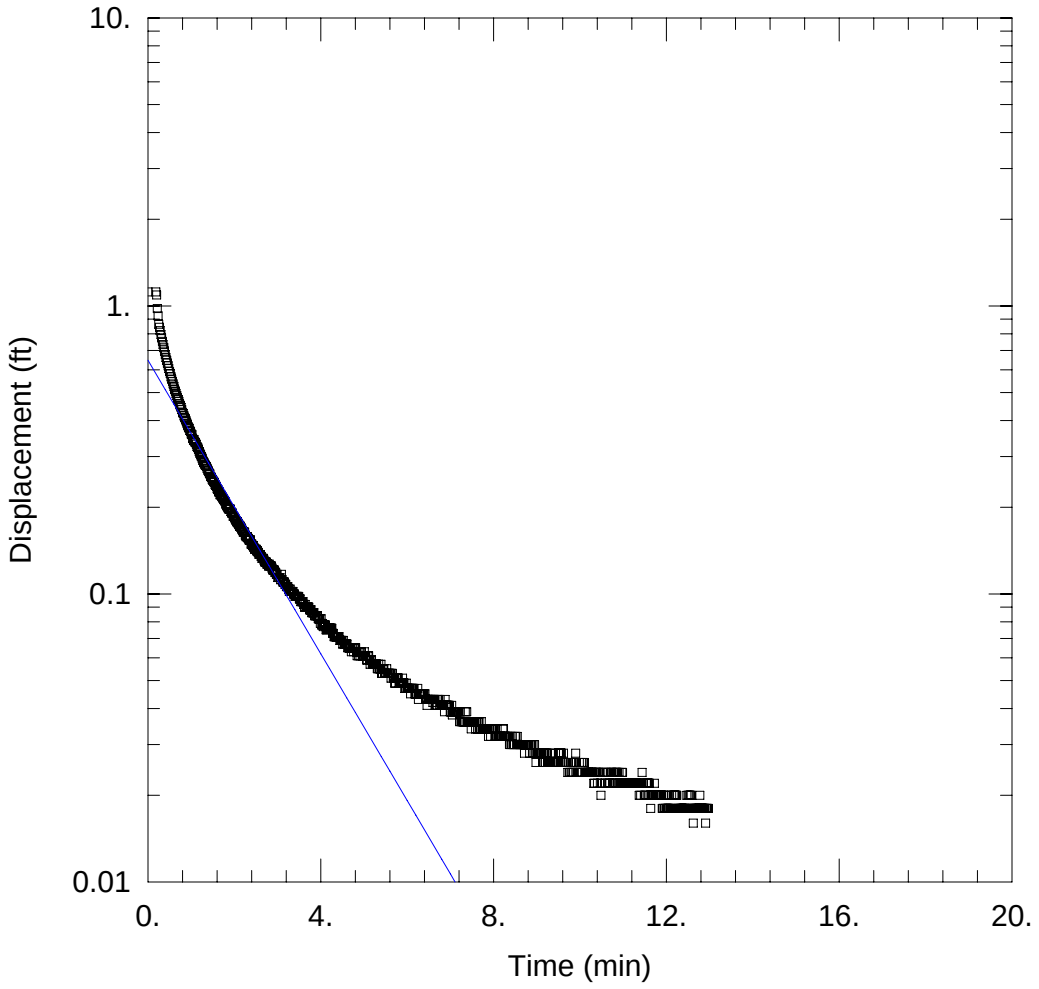
WELL DATA (BSMW0007)

Initial Displacement: 1.113 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 1.005 ft/day Le = 0.1 ft



BSMW0007 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW7-in2BR.aqt
Date: 02/12/09 Time: 14:14:06

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

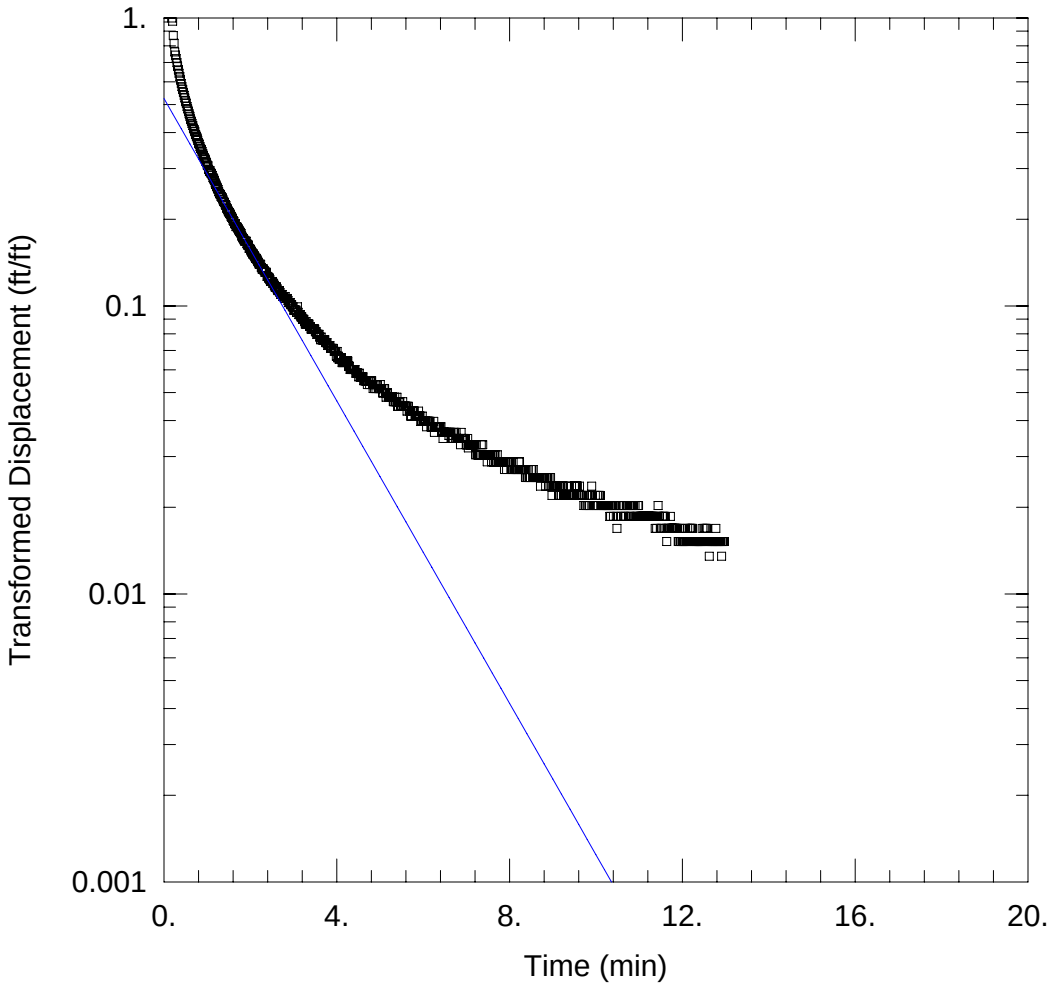
WELL DATA (BSMW0007)

Initial Displacement: 1.119 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 3.914 ft/day y0 = 0.6475 ft



BSMW0007 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW7-in2DGN.aqt
Date: 02/12/09 Time: 14:14:32

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

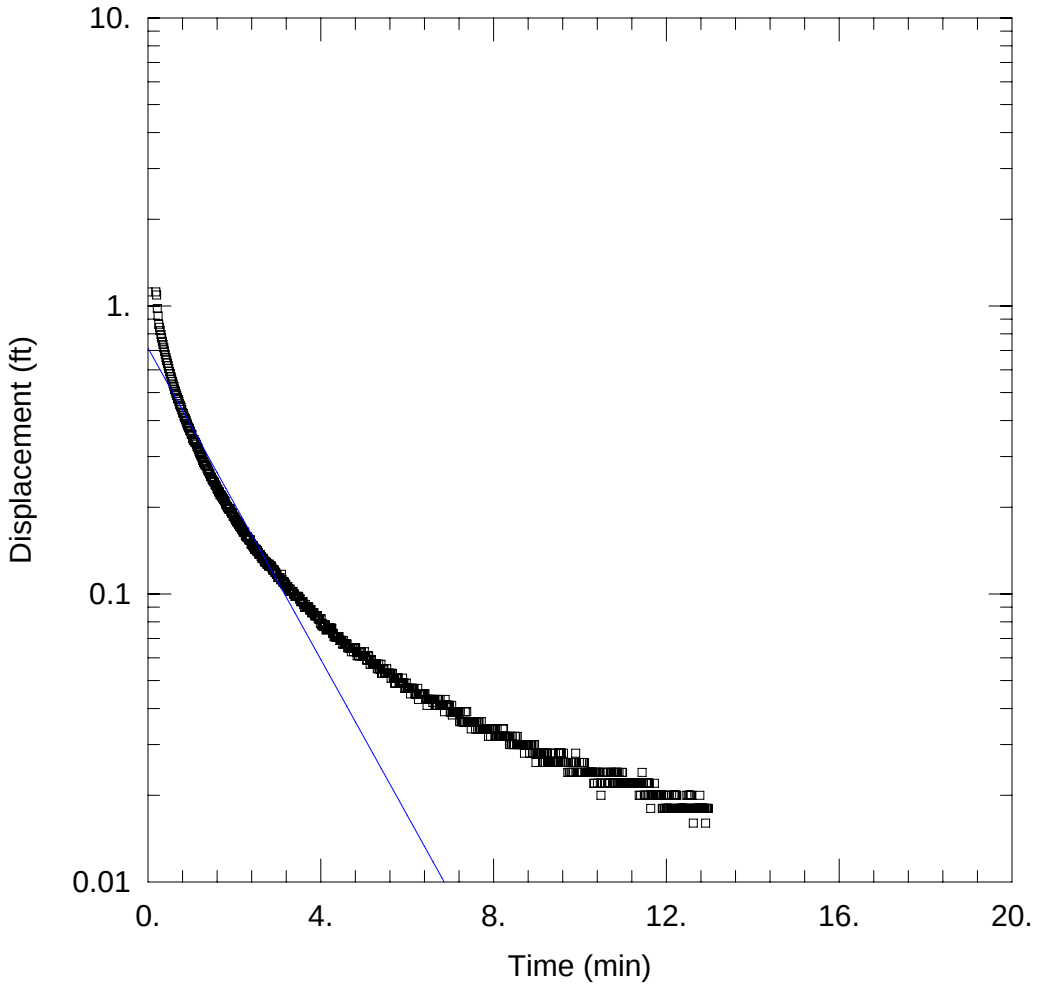
WELL DATA (BSMW0007)

Initial Displacement: 1.119 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 4.859 ft/day y0 = 0.6037 ft



BSMW0007 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW7-in2HV.aqt
Date: 02/12/09 Time: 14:15:02

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

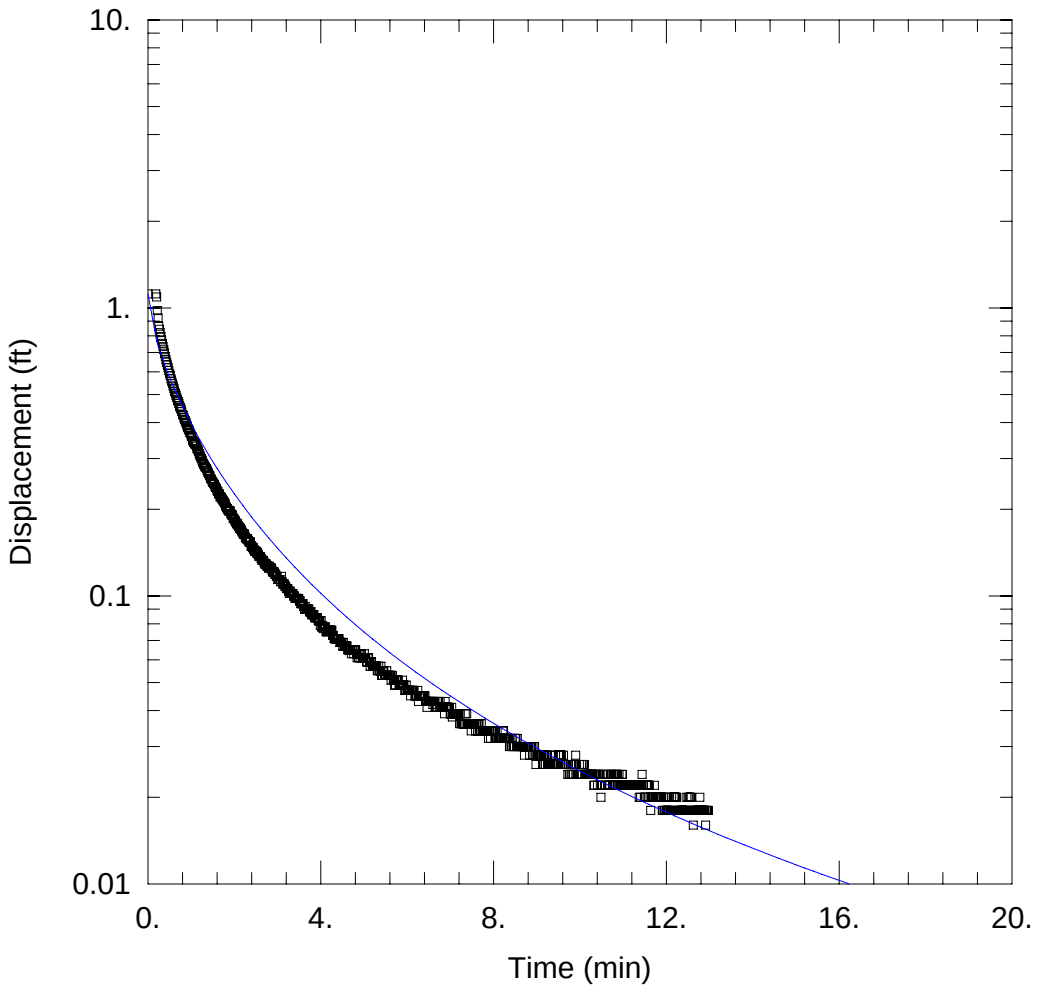
WELL DATA (BSMW0007)

Initial Displacement: 1.119 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 6.598 ft/day y0 = 0.7141 ft



BSMW0007 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW7-in2KGS.aqt
Date: 02/12/09 Time: 14:15:30

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft

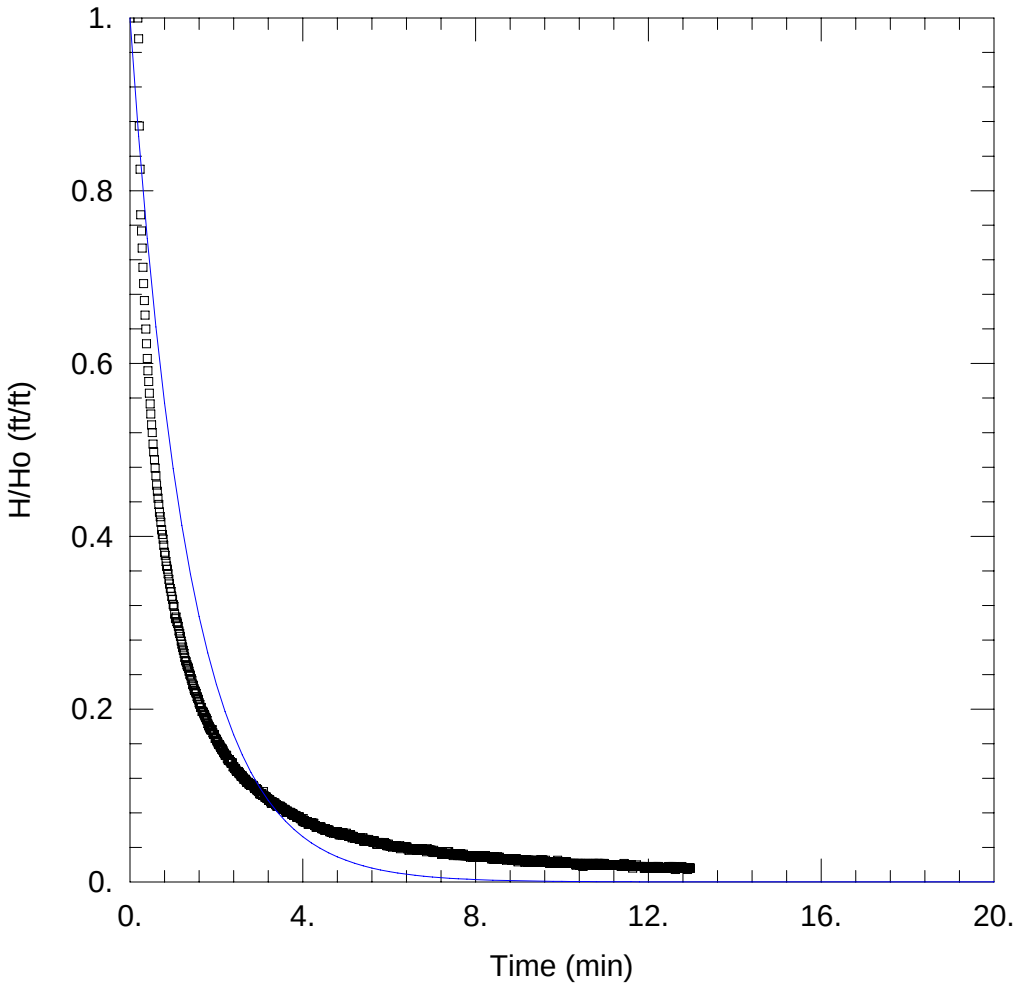
WELL DATA (BSMW0007)

Initial Displacement: 1.119 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.7087 ft/day
Kz/Kr = 1.
Ss = 0.0004286 ft^{-1}



BSMW0007 - FALLING HEAD TRIAL 2

Data Set: L:\...\BSMW7-in2SG.aqt
Date: 02/12/09 Time: 14:16:27

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

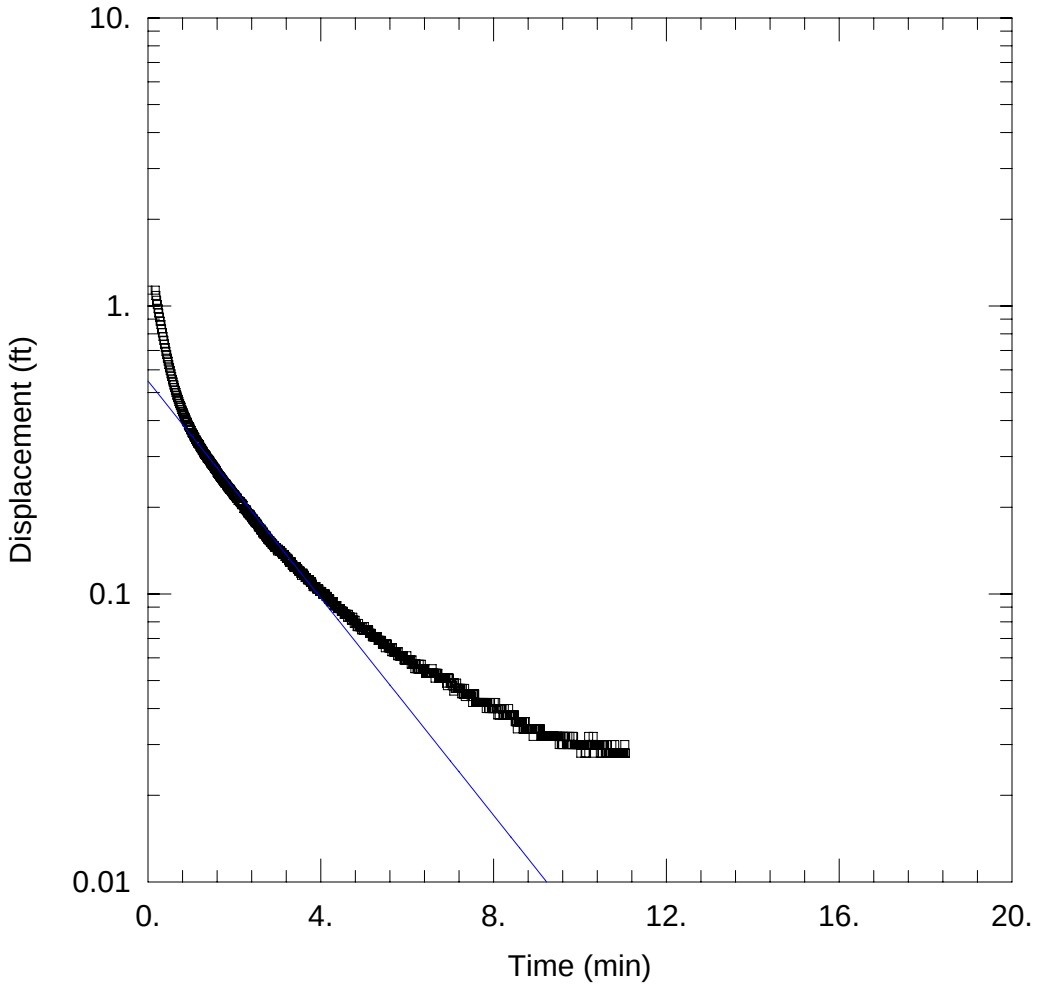
WELL DATA (BSMW0007)

Initial Displacement: 1.119 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.7087 ft/day Le = 0.1 ft



BSMW0007 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW7-out1BR.aqt
Date: 02/12/09 Time: 15:41:50

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

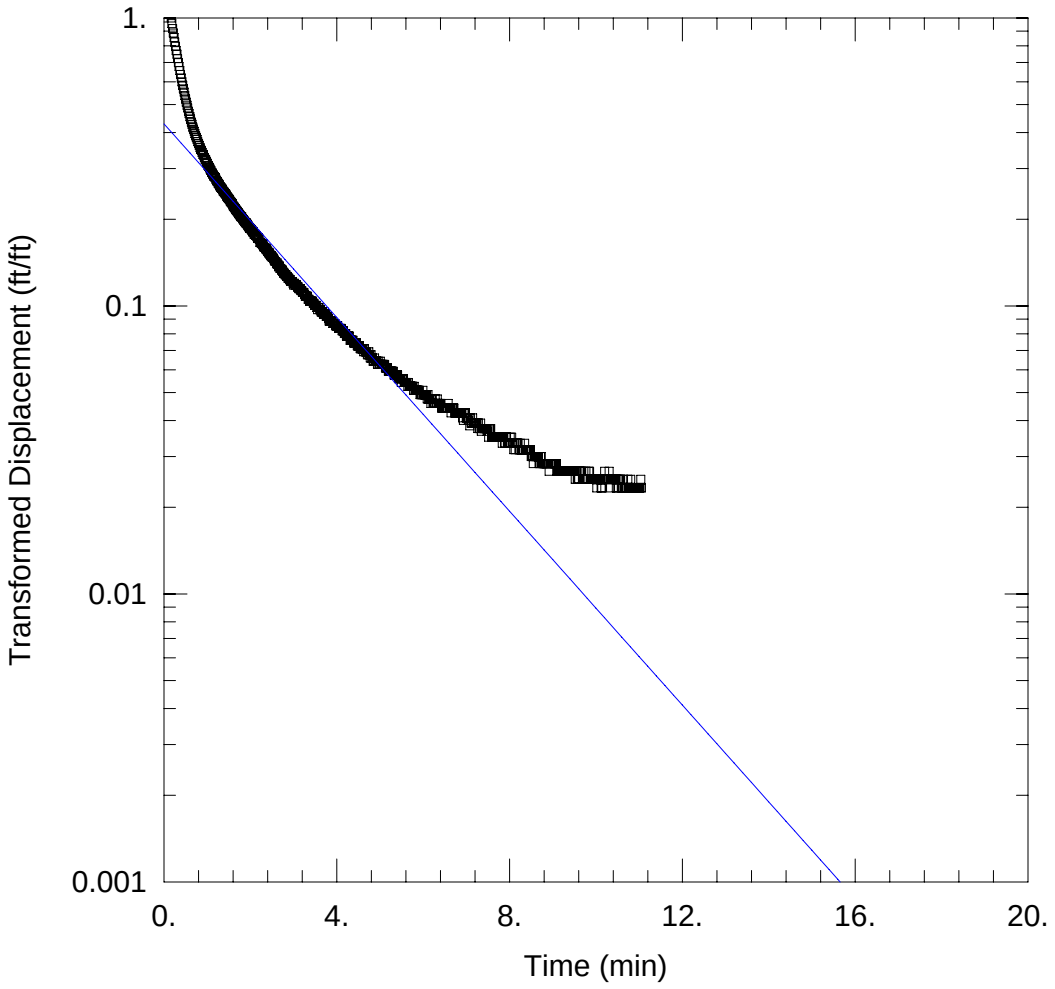
WELL DATA (BSMW0007)

Initial Displacement: 1.134 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.896 ft/day y0 = 0.5488 ft



BSMW0007 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW7-out1DGN.aqt
Date: 02/12/09 Time: 15:42:11

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

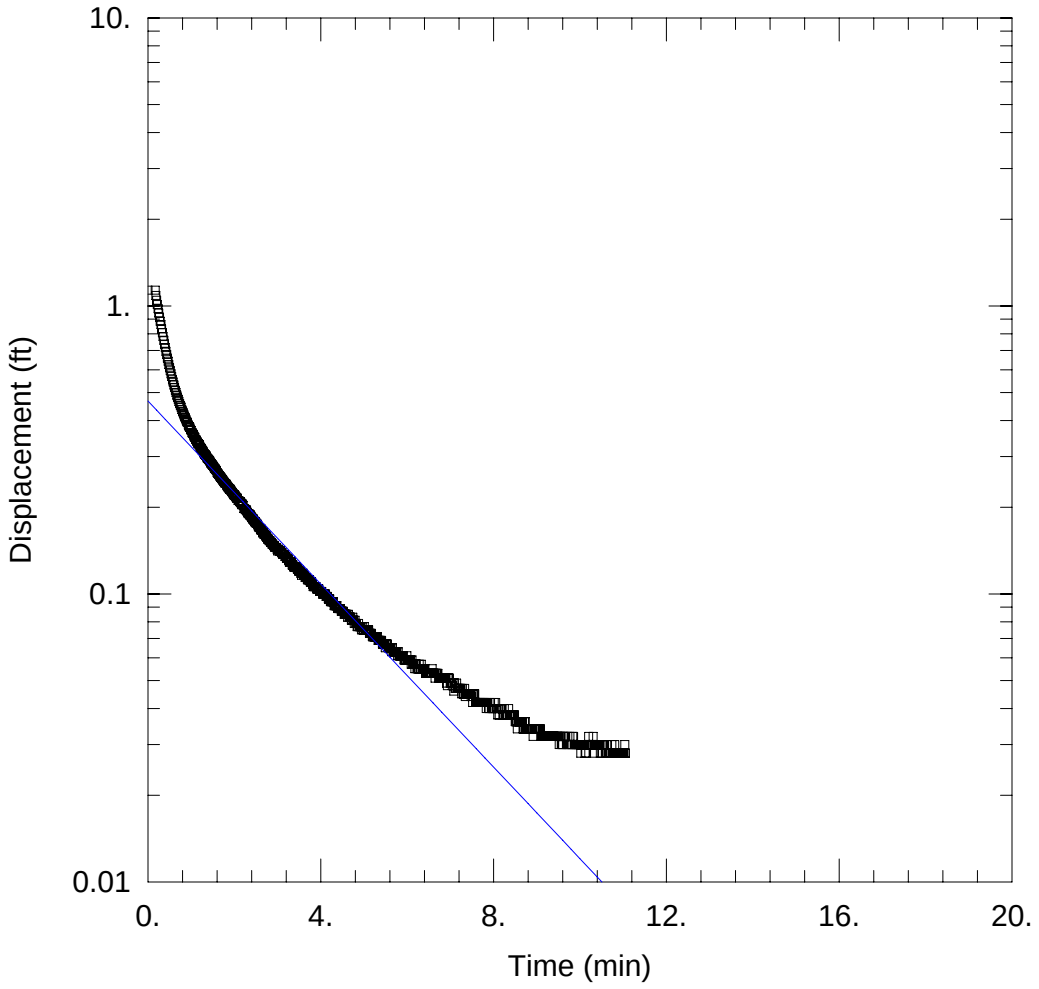
WELL DATA (BSMW0007)

Initial Displacement: 1.134 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 3.111 ft/day y0 = 0.5025 ft



BSMW0007 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW7-out1HV.aqt
Date: 02/12/09 Time: 15:42:35

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

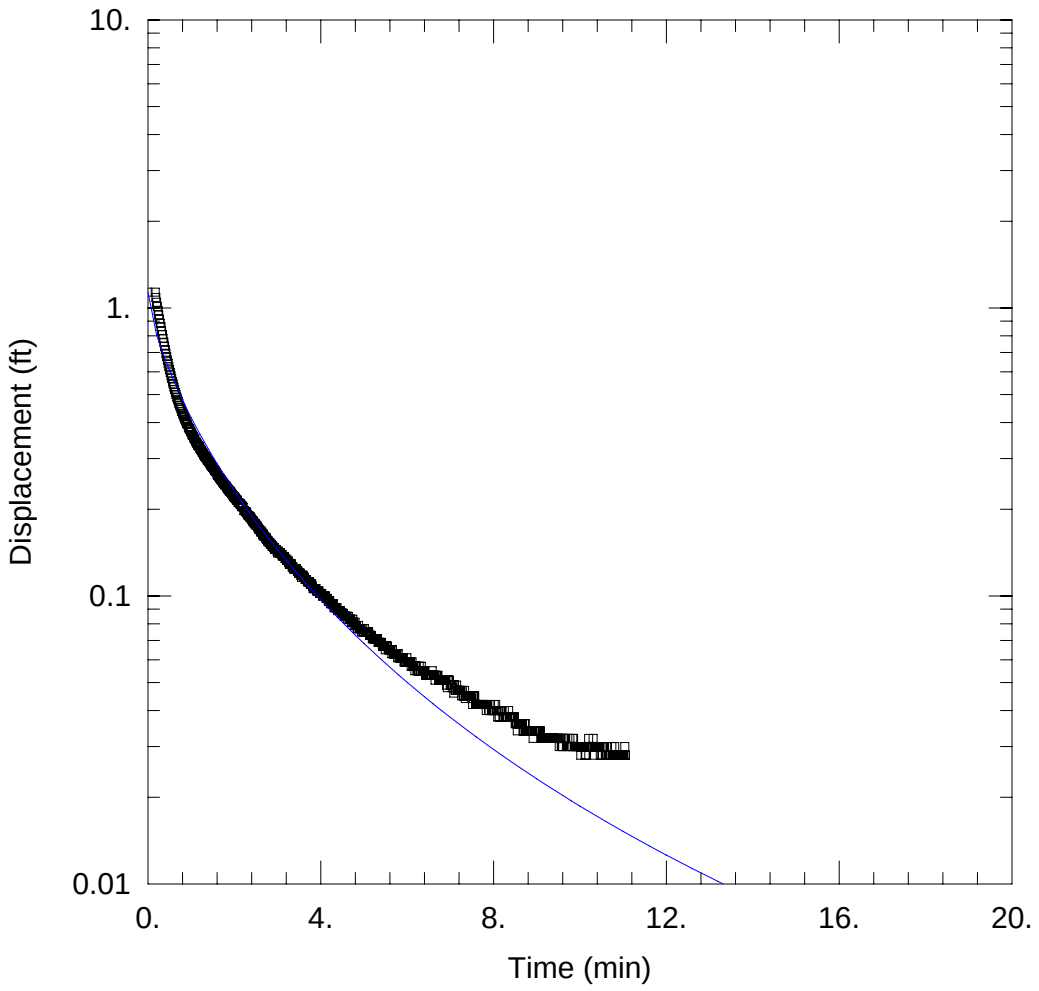
Saturated Thickness: 38.87 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (BSMW0007)

Initial Displacement: 1.134 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 3.877 ft/day
y0 = 0.4673 ft



BSMW0007 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW7-out1KGS.aqt
Date: 02/12/09 Time: 15:43:20

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft

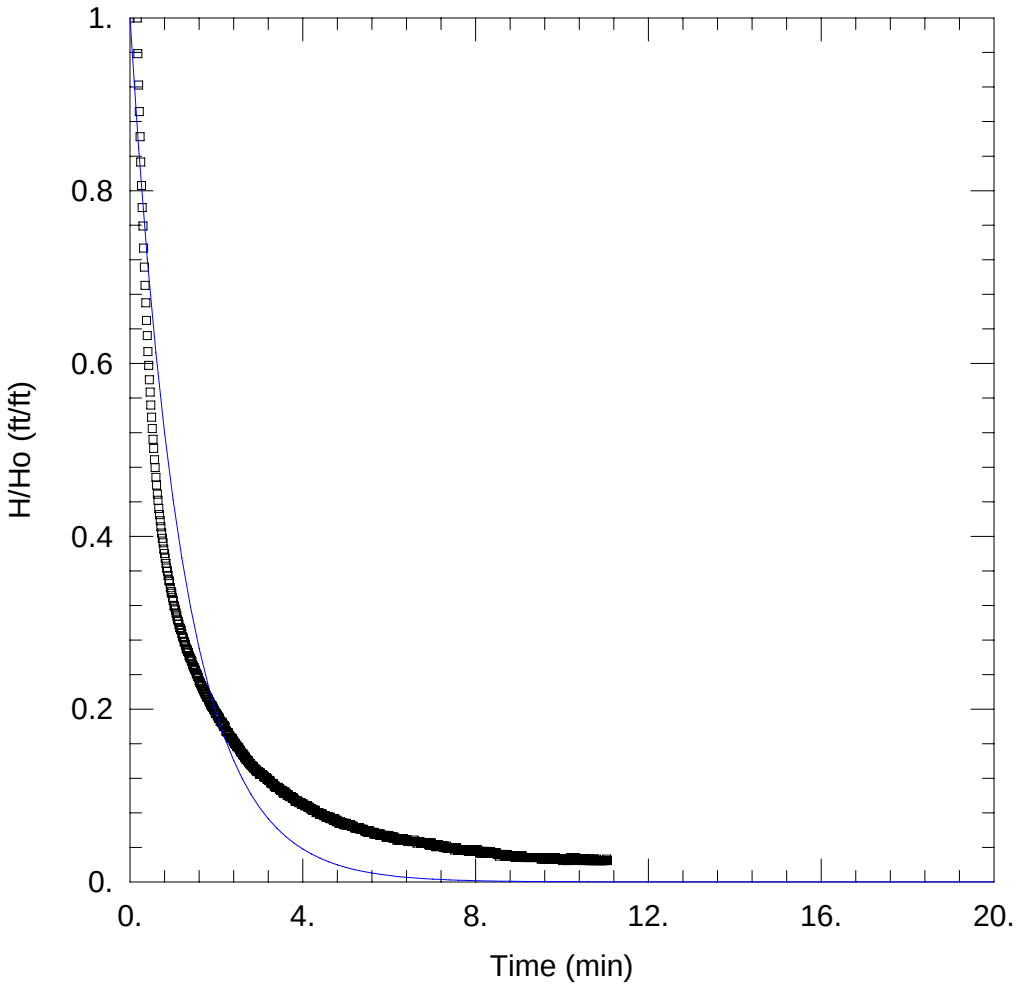
WELL DATA (BSMW0007)

Initial Displacement: 1.134 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.7584 ft/day
Kz/Kr = 1.
Ss = 0.0002666 ft^{-1}



BSMW0007 - RISING HEAD TRIAL 1

Data Set: L:\...\BSMW7-out1SG.aqt
Date: 02/12/09 Time: 15:43:44

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

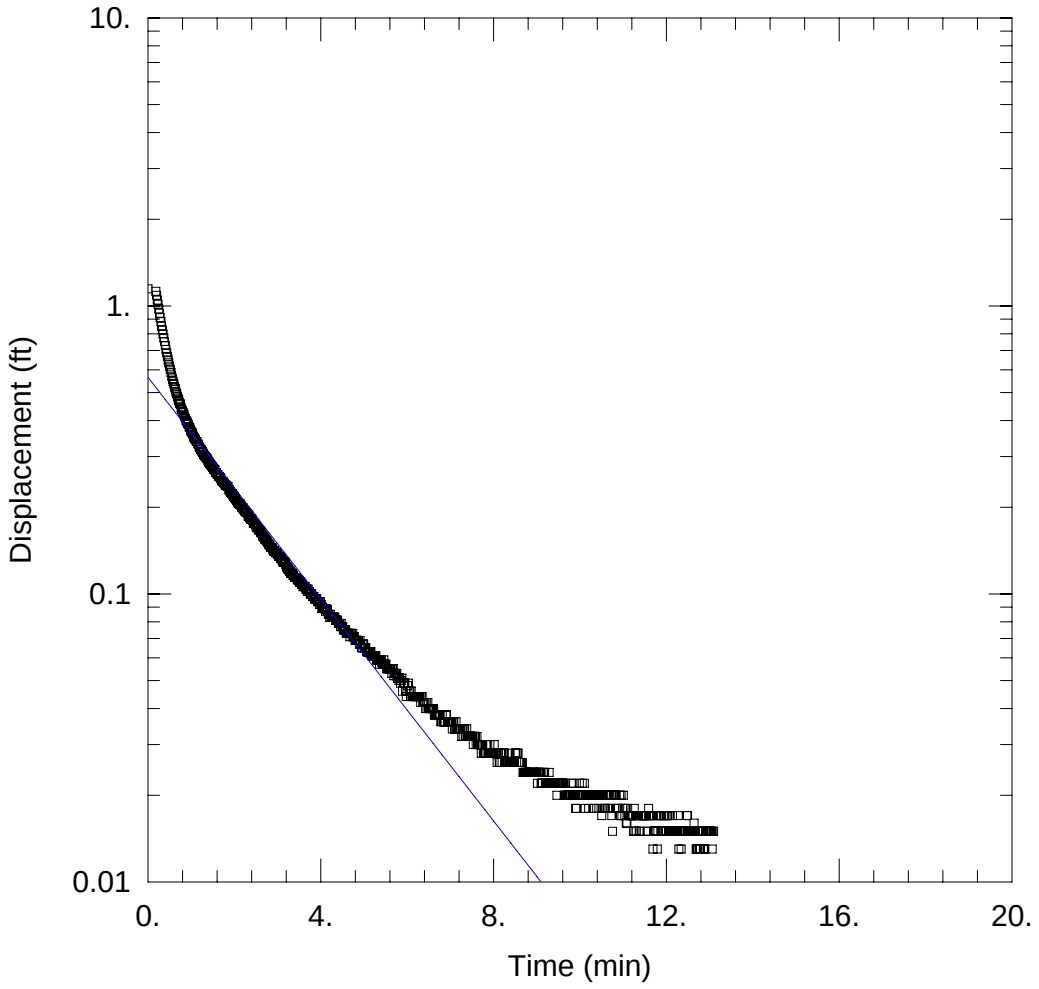
WELL DATA (BSMW0007)

Initial Displacement: 1.134 ft Static Water Column Height: 6.87 ft
Total Well Penetration Depth: 10. ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.7853 ft/day Le = 0.1 ft



BSMW0007 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW7-out2BR.aqt
Date: 02/12/09 Time: 15:49:18

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

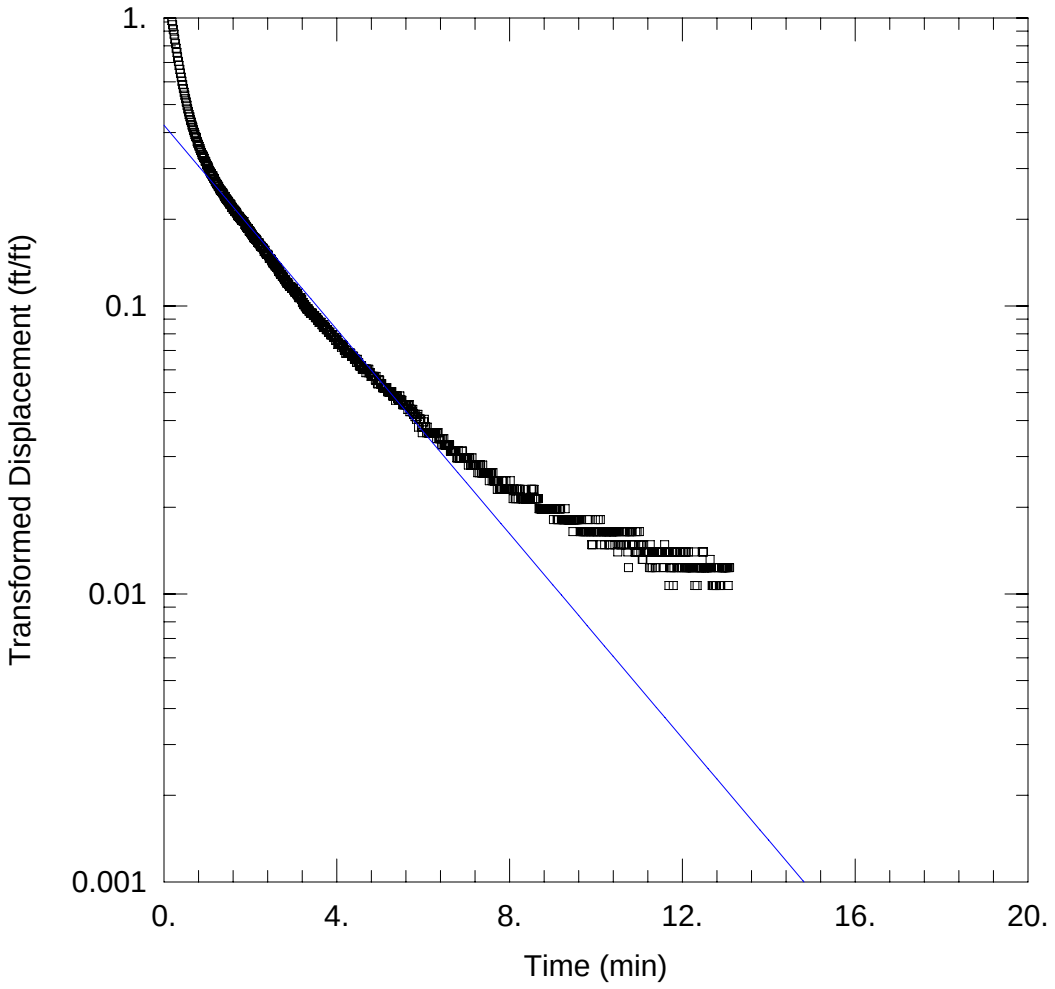
WELL DATA (BSMW0007)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.958 ft/day y0 = 0.5648 ft



BSMW0007 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW7-out2DGN.aqt
Date: 02/12/09 Time: 15:46:25

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

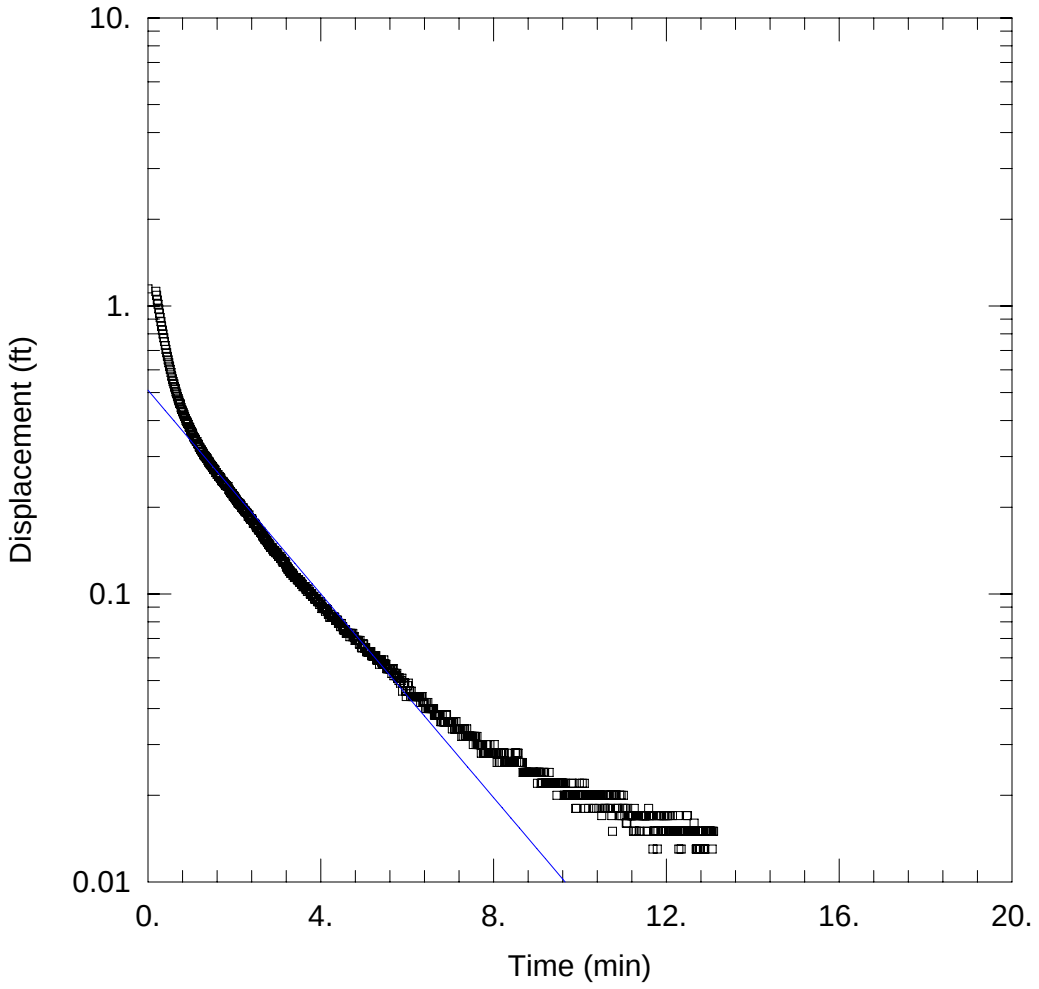
WELL DATA (BSMW0007)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 3.281 ft/day y0 = 0.5025 ft



BSMW0007 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW7-out2HV.aqt
Date: 02/12/09 Time: 15:46:52

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

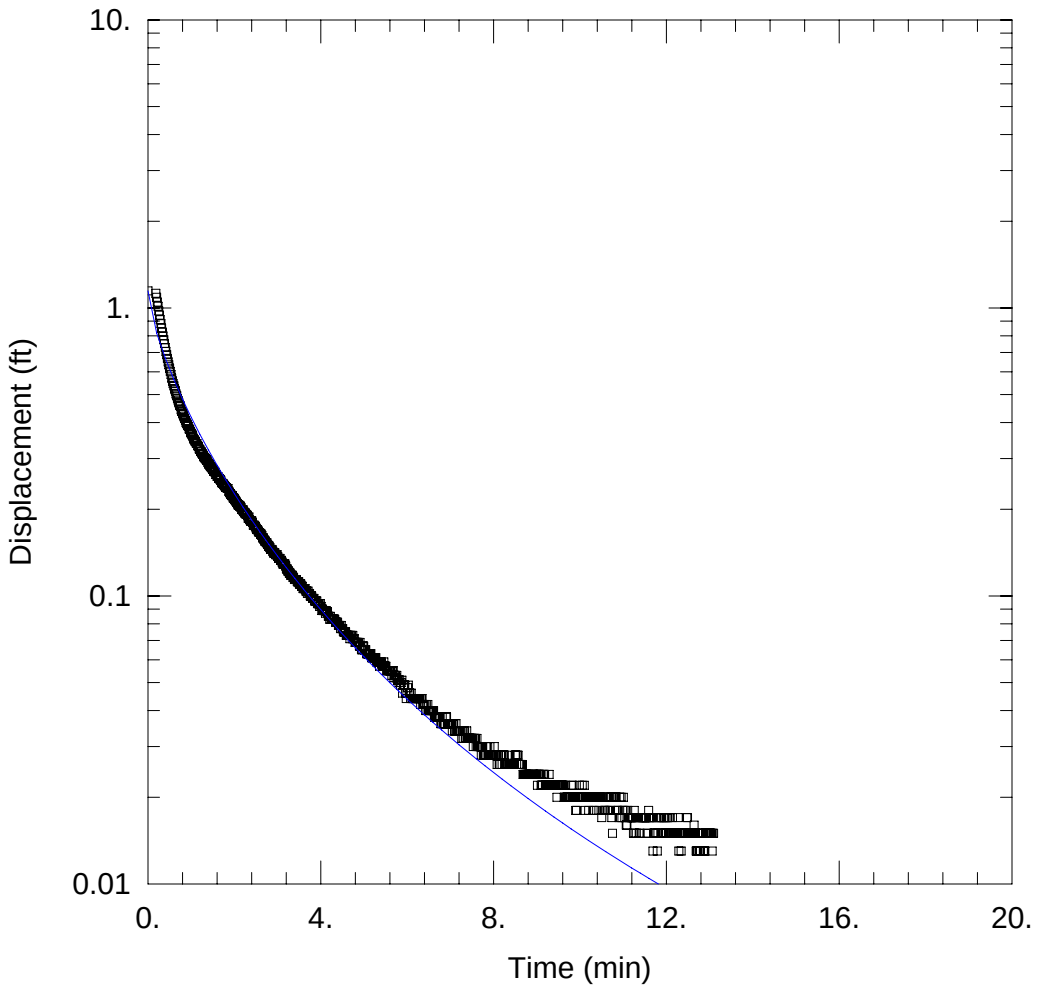
WELL DATA (BSMW0007)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 4.315 ft/day y0 = 0.5097 ft



BSMW0007 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW7-out2KGS.aqt
Date: 02/12/09 Time: 15:47:21

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft

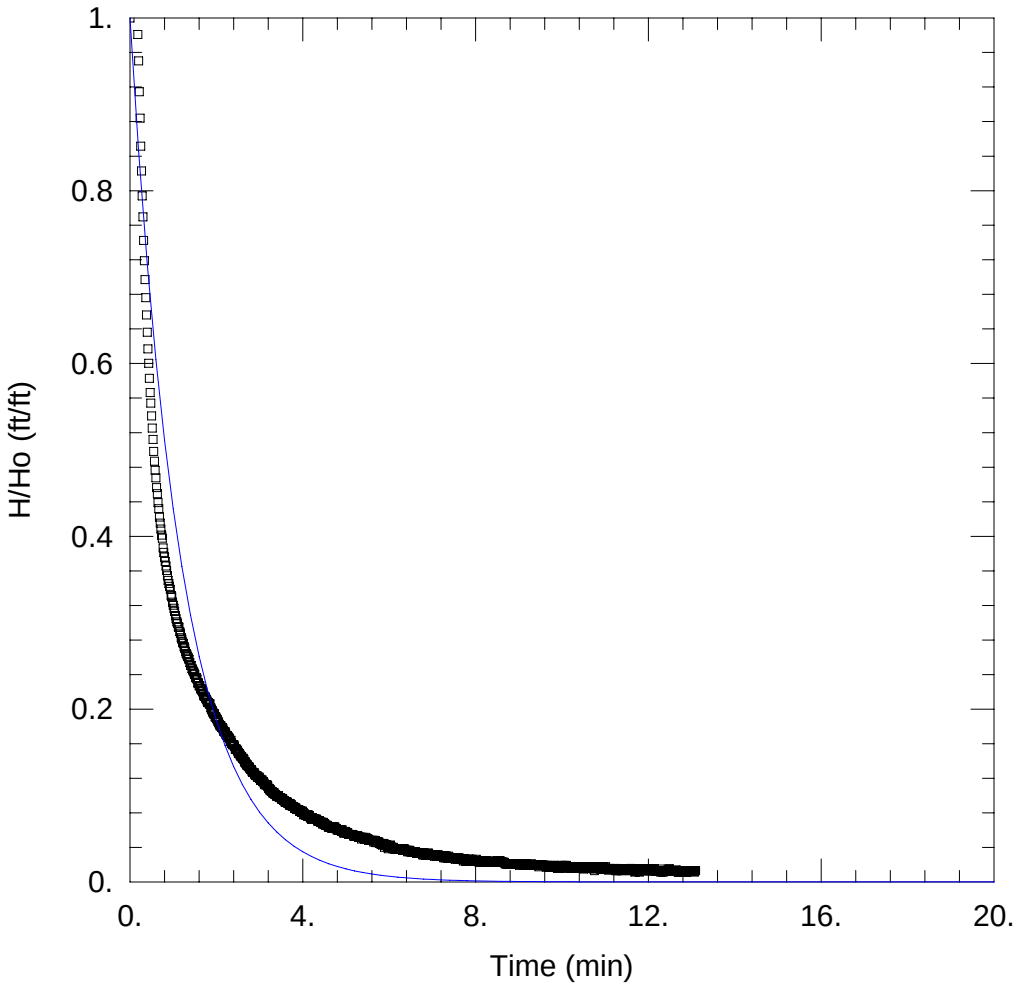
WELL DATA (BSMW0007)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.8061 ft/day
Kz/Kr = 1.
Ss = 0.0002137 ft^{-1}



BSMW0007 - RISING HEAD TRIAL 2

Data Set: L:\...\BSMW7-out2SG.aqt
Date: 02/12/09 Time: 15:47:47

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: BSMW0007
Test Date: 9/8/2005

AQUIFER DATA

Saturated Thickness: 38.87 ft Anisotropy Ratio (Kz/Kr): 1.

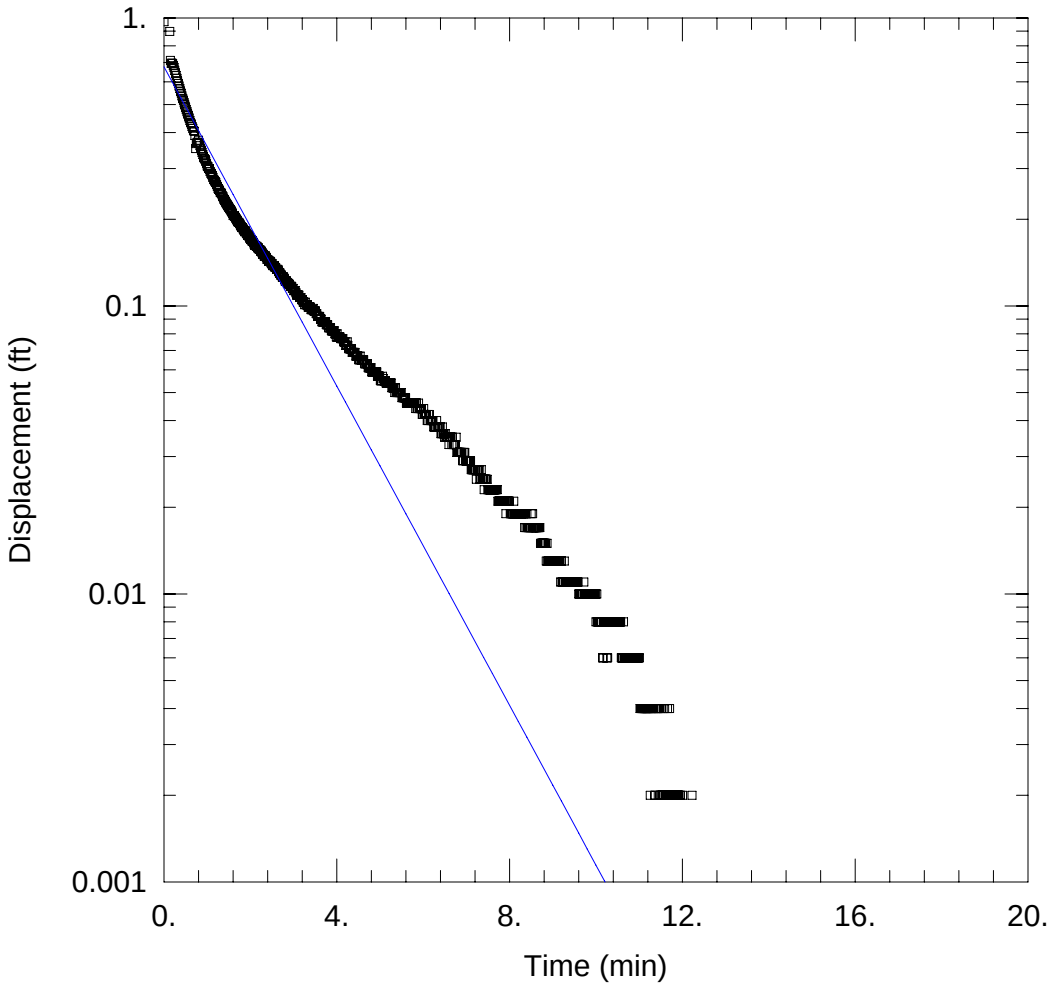
WELL DATA (BSMW0007)

Initial Displacement: 1.146 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 6.87 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.8061 ft/day Le = 0.1 ft



RRMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW1-in1BR.aqt
Date: 02/12/09 Time: 15:50:40

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

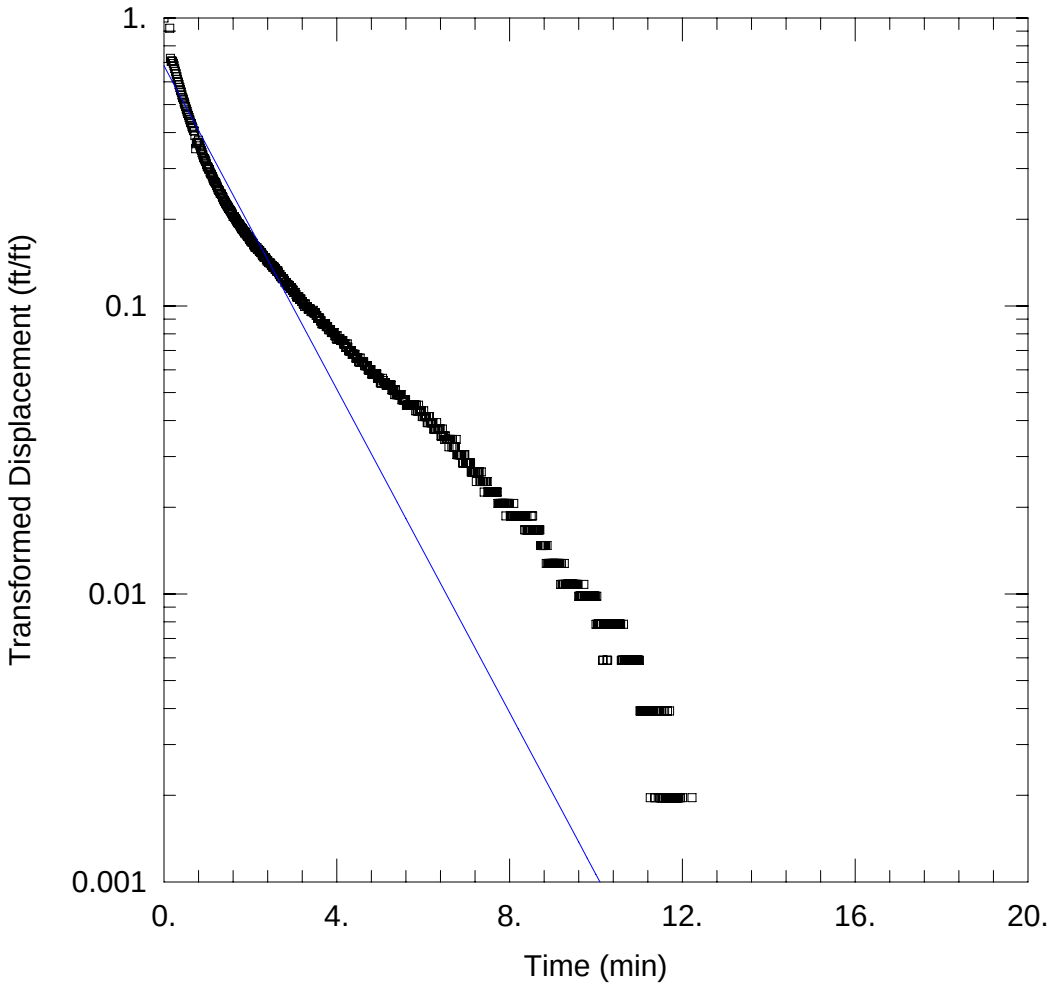
WELL DATA (RRMW0001)

Initial Displacement: 0.97 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.6193 ft/day y0 = 0.6764 ft



RRMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW1-in1DGN.aqt
Date: 02/12/09 Time: 15:51:10

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

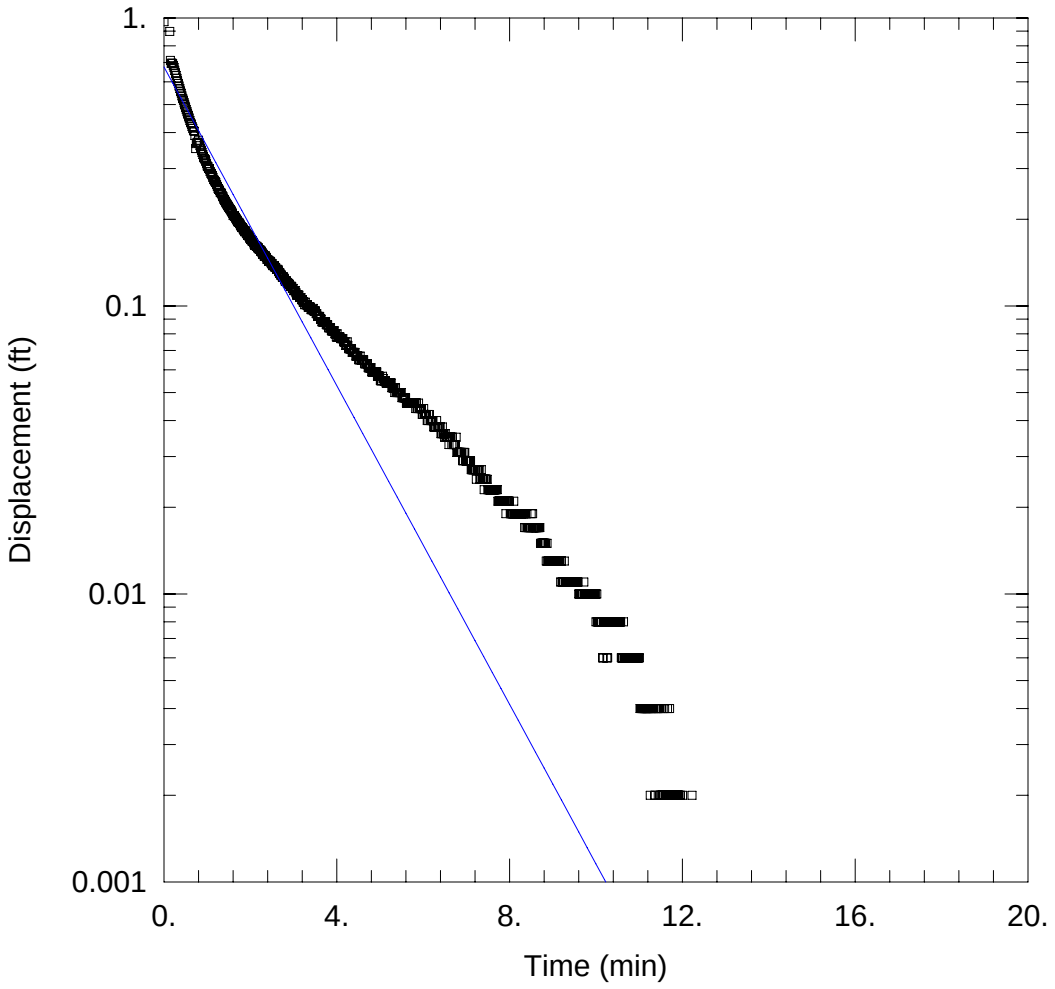
WELL DATA (RRMW0001)

Initial Displacement: 0.97 ft Static Water Column Height: 10.66 ft
Total Well Penetration Depth: 10.66 ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 0.7475 ft/day y0 = 0.6721 ft



RRMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW1-in1HV.aqt
Date: 02/12/09 Time: 15:51:36

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

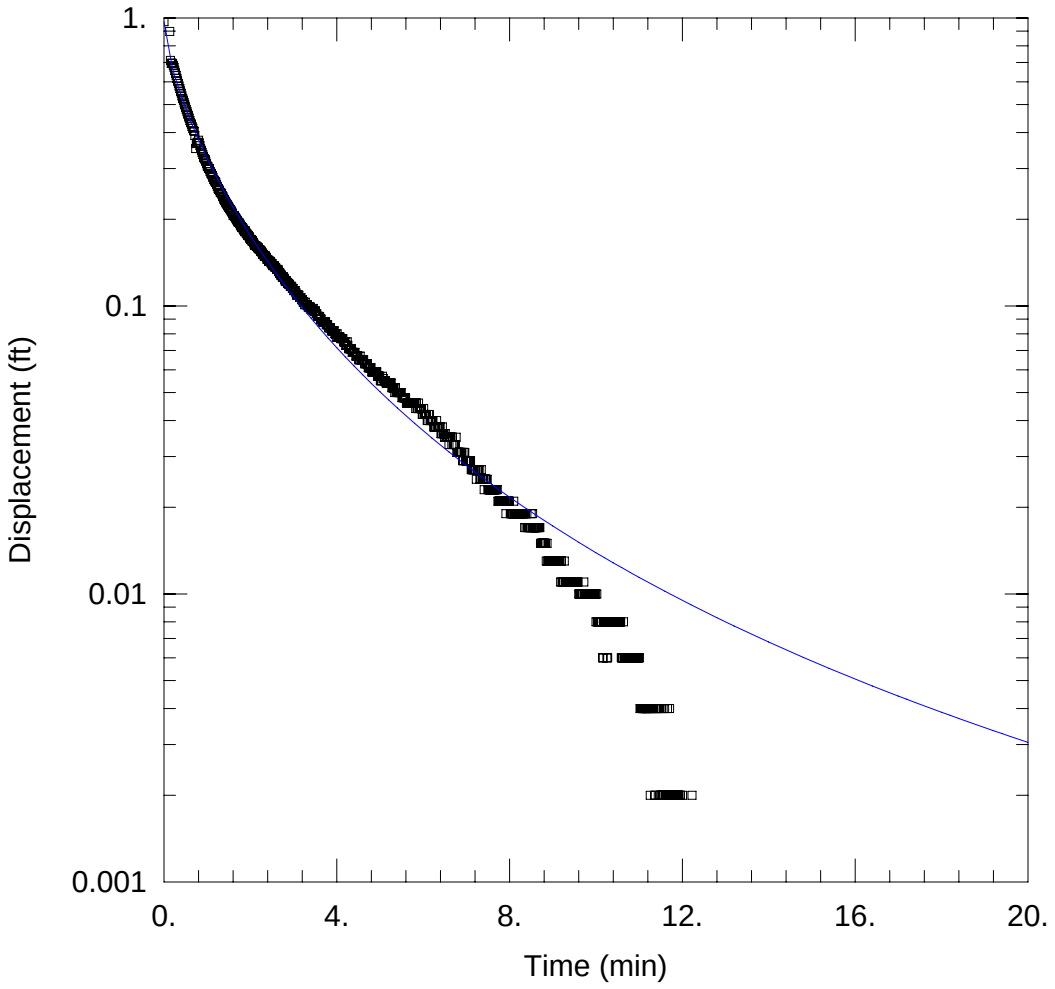
WELL DATA (RRMW0001)

Initial Displacement: 0.97 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.9721 ft/day y0 = 0.6756 ft



RRMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW1-in1KGS.aqt
Date: 02/12/09 Time: 15:52:01

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft

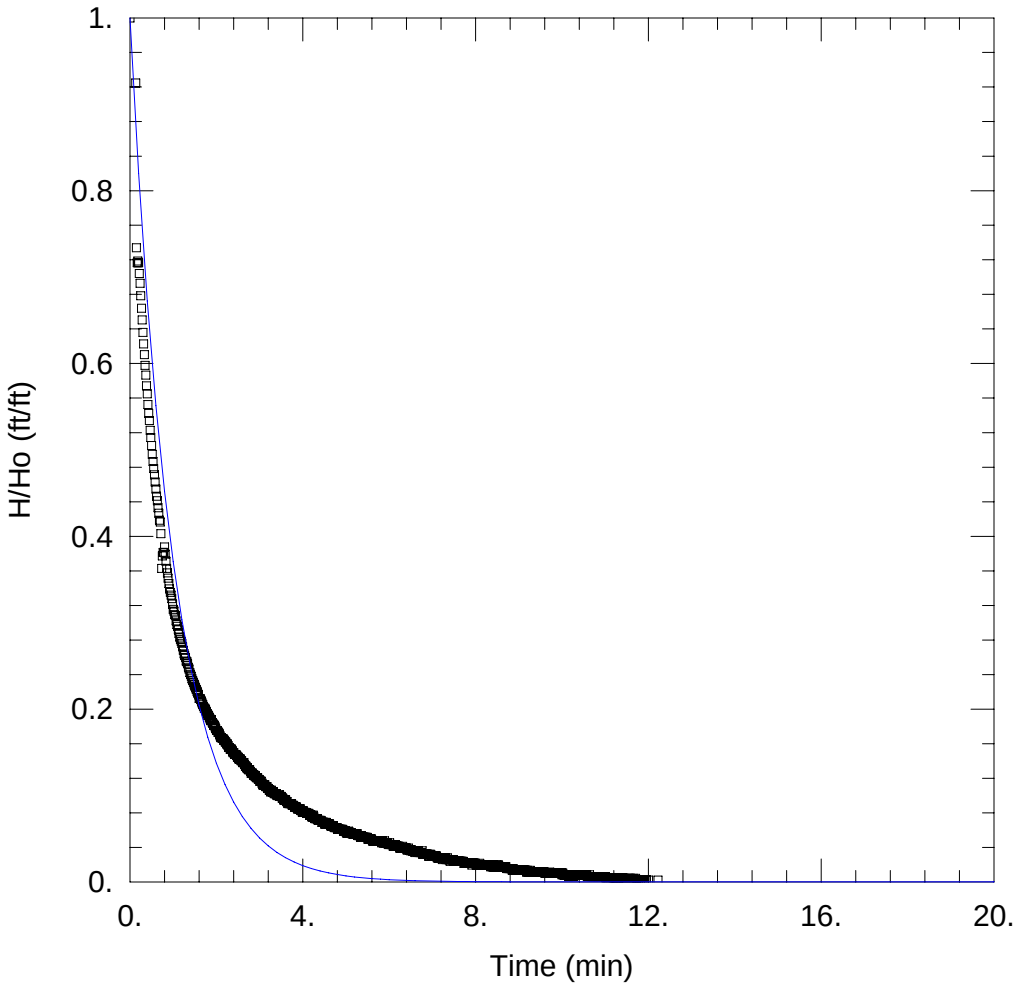
WELL DATA (RRMW0001)

Initial Displacement: 0.97 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.8801 ft/day
Kz/Kr = 1.
Ss = 0.0002841 ft^{-1}



RRMW0001 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW1-in1SG.aqt
Date: 02/12/09 Time: 15:52:27

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Shewin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

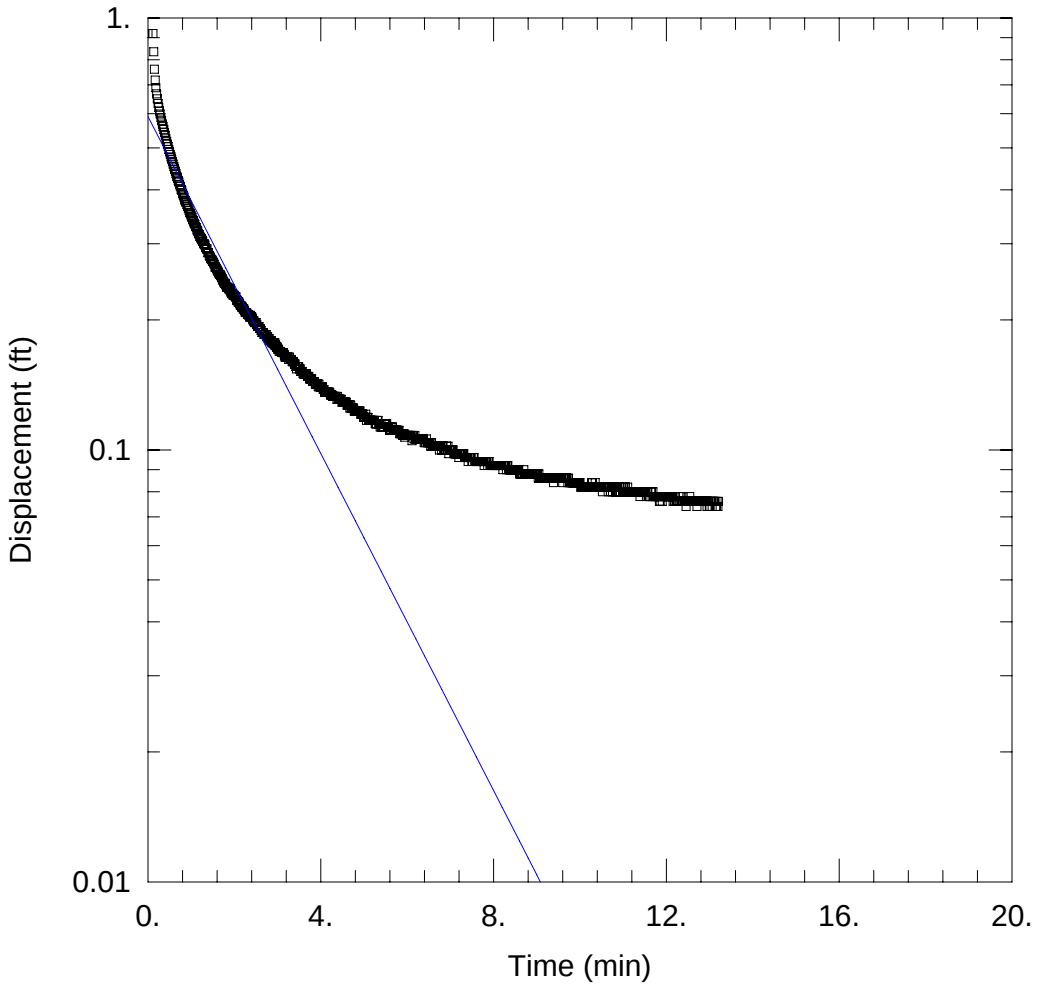
WELL DATA (RRMW0001)

Initial Displacement: 0.97 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.9634 ft/day Le = 0.1 ft



RRMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW1-in2BR.aqt
Date: 02/12/09 Time: 15:52:52

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

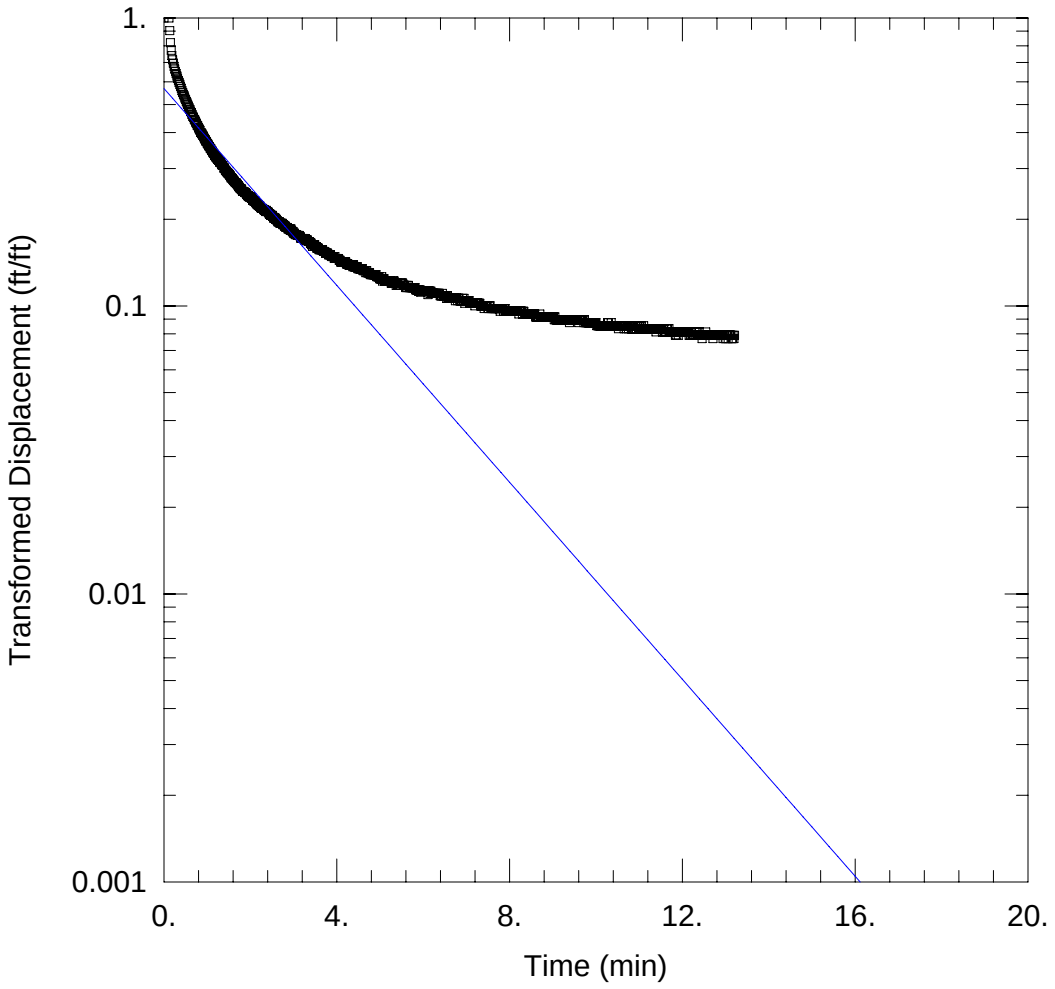
WELL DATA (RRMW0001)

Initial Displacement: 0.92 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.4358 ft/day y0 = 0.5913 ft



RRMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW1-in2DGN.aqt
Date: 02/12/09 Time: 15:53:17

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

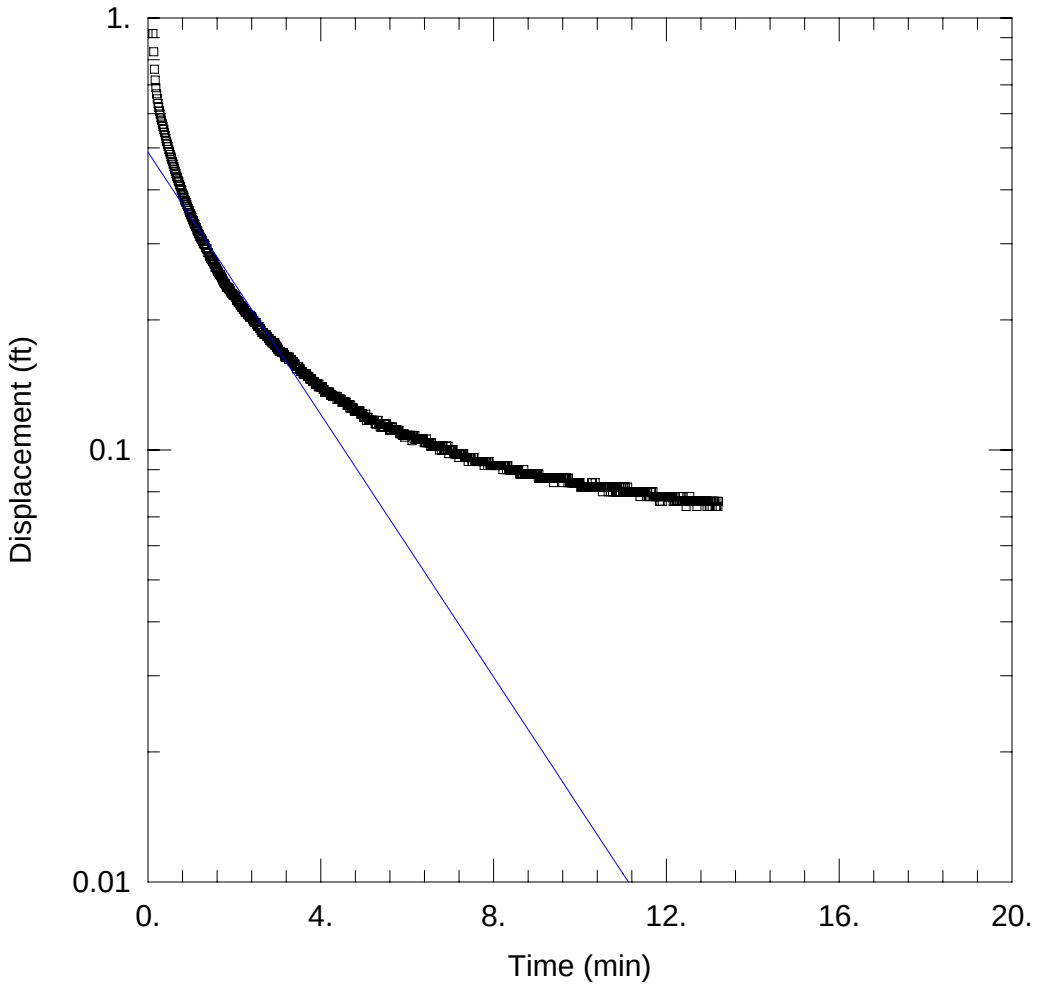
WELL DATA (RRMW0001)

Initial Displacement: 0.92 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 0.4551 ft/day y0 = 0.5338 ft



RRMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW1-in2HV.aqt
Date: 02/12/09 Time: 15:53:43

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

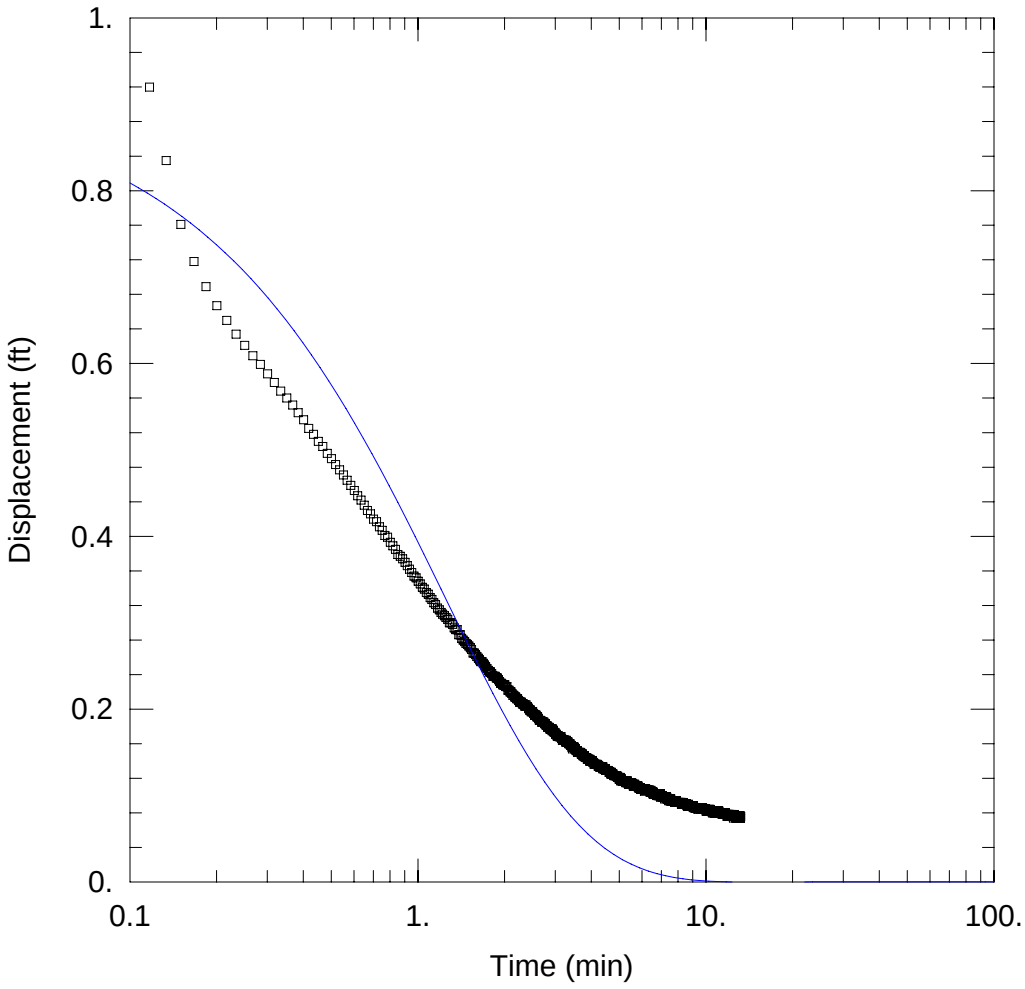
WELL DATA (RRMW0001)

Initial Displacement: 0.92 ft Static Water Column Height: 10.66 ft
Total Well Penetration Depth: 10.66 ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.5337 ft/day y0 = 0.4892 ft



RRMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW1-in2KGS.aqt
Date: 02/12/09 Time: 15:54:10

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft

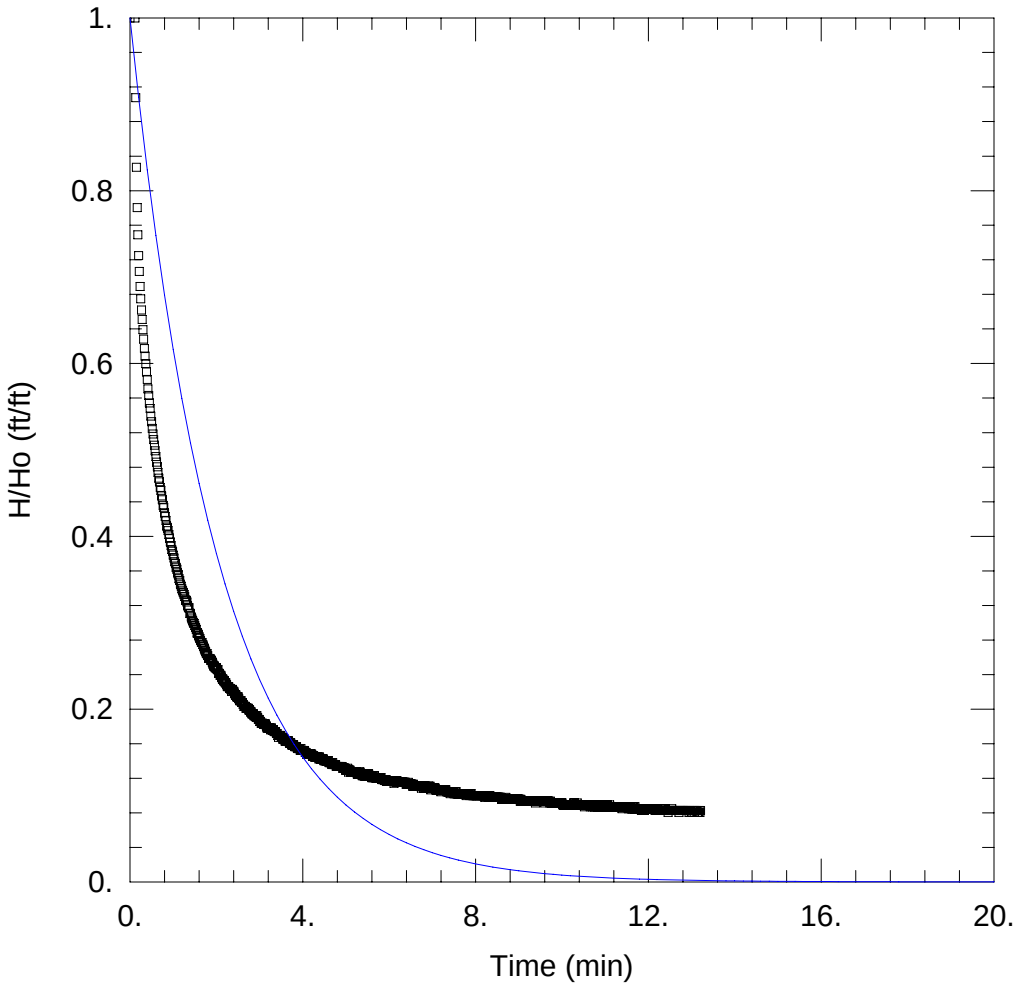
WELL DATA (RRMW0001)

Initial Displacement: 0.92 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.9206 ft/day
Ss = 2.344E-5 ft^{-1}
Kz/Kr = 1.



RRMW0001 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW1-in2SG.aqt
Date: 02/12/09 Time: 15:54:43

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

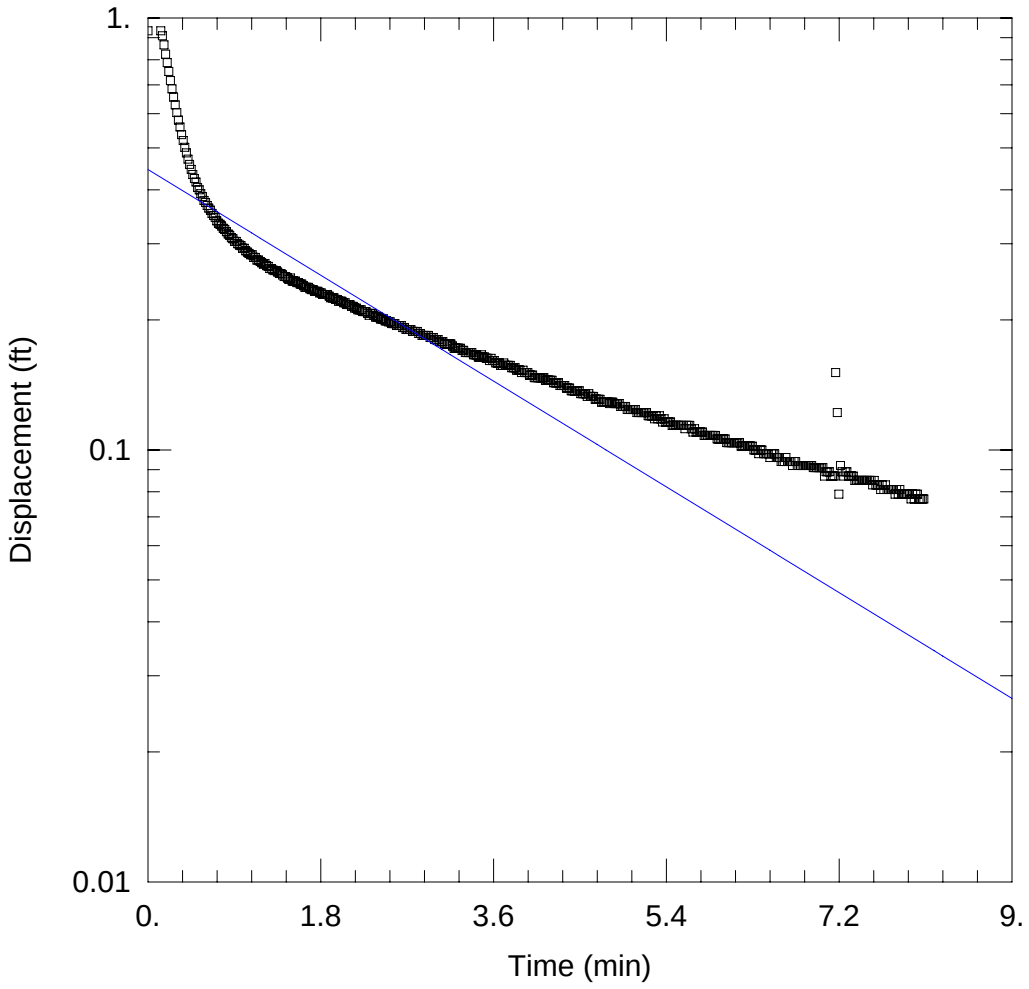
WELL DATA (RRMW0001)

Initial Displacement: 0.92 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.4695 ft/day Le = 0.9841 ft



RRMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW1-out1BR.aqt
Date: 02/12/09 Time: 16:05:03

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

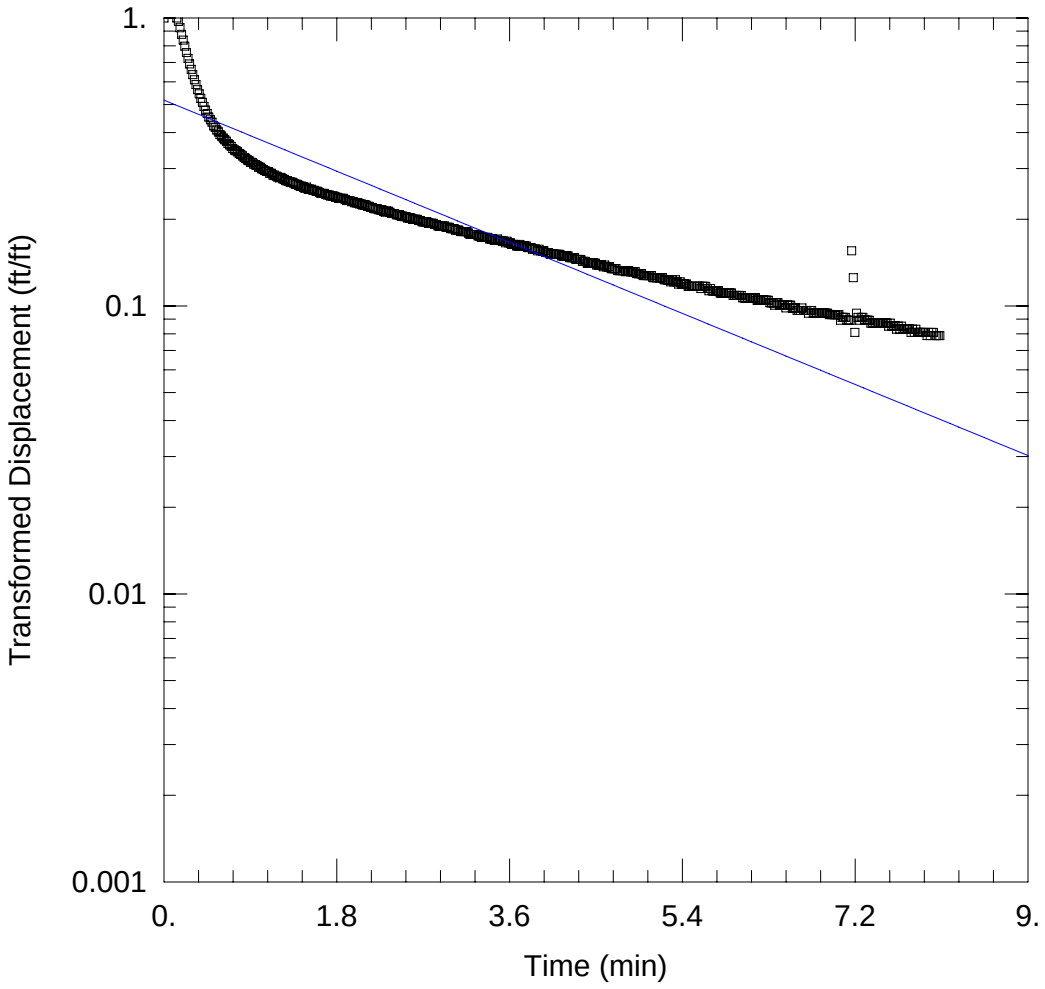
WELL DATA (RRMW0001)

Initial Displacement: 0.934 ft Static Water Column Height: 10.66 ft
Total Well Penetration Depth: 10.66 ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.3039 ft/day y0 = 0.4458 ft



RRMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW1-out1DGN.aqt
Date: 02/12/09 Time: 16:05:29

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

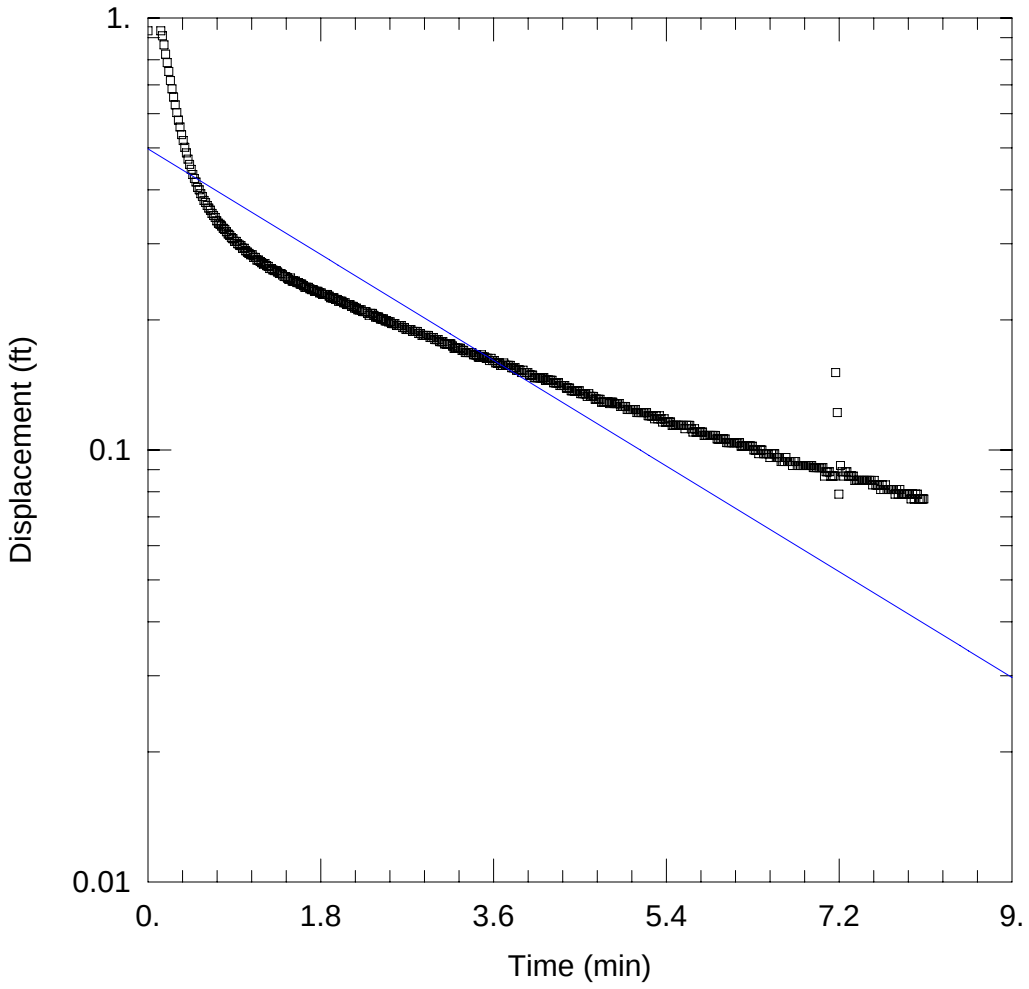
WELL DATA (RRMW0001)

Initial Displacement: 0.934 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Dagan

K = 0.365 ft/day
y0 = 0.4951 ft



RRMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW1-out1HV.aqt
Date: 02/12/09 Time: 16:06:01

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

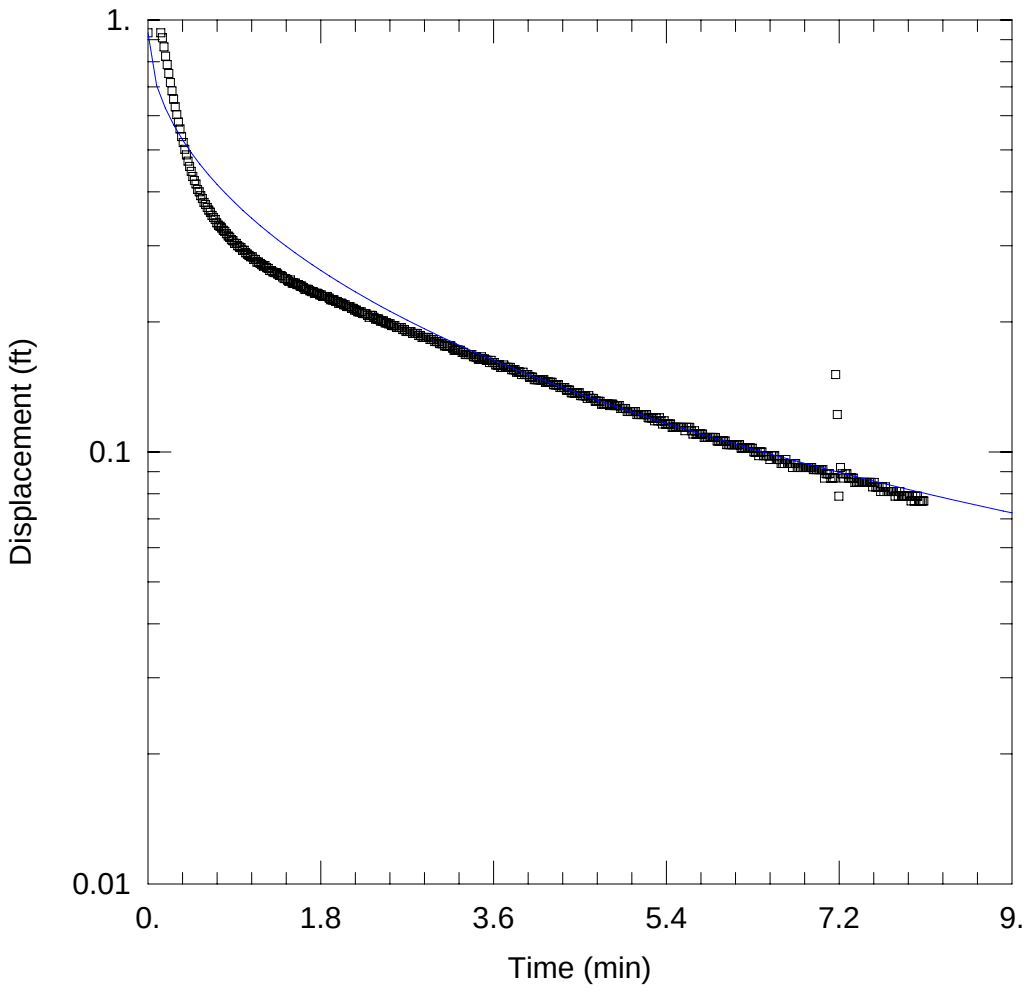
WELL DATA (RRMW0001)

Initial Displacement: 0.934 ft Static Water Column Height: 10.66 ft
Total Well Penetration Depth: 10.66 ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.4776 ft/day y0 = 0.4976 ft



RRMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW1-out1KGS.aqt
Date: 02/12/09 Time: 16:06:22

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft

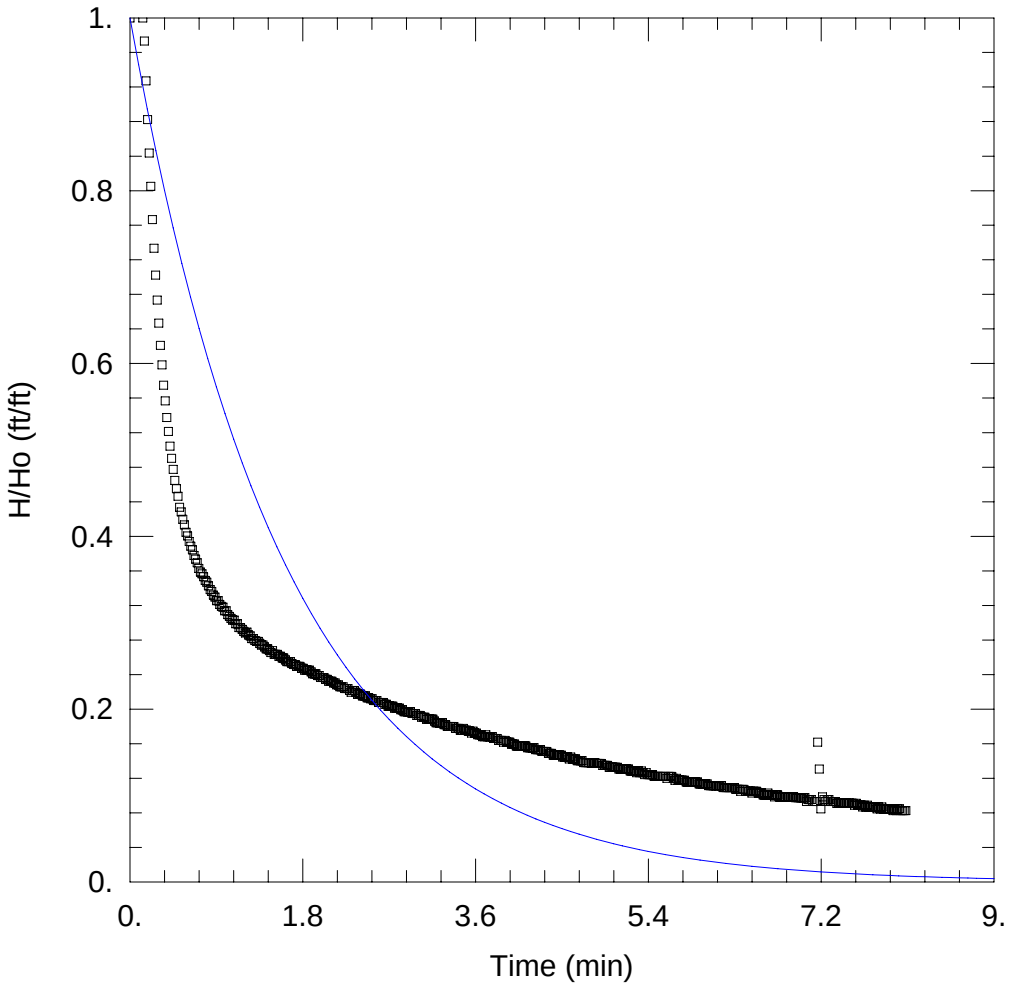
WELL DATA (RRMW0001)

Initial Displacement: 0.934 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.3074 ft/day
Kz/Kr = 1.
Ss = 0.002344 ft^{-1}



RRMW0001 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW1-out1SG.aqt
Date: 02/12/09 Time: 16:06:45

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

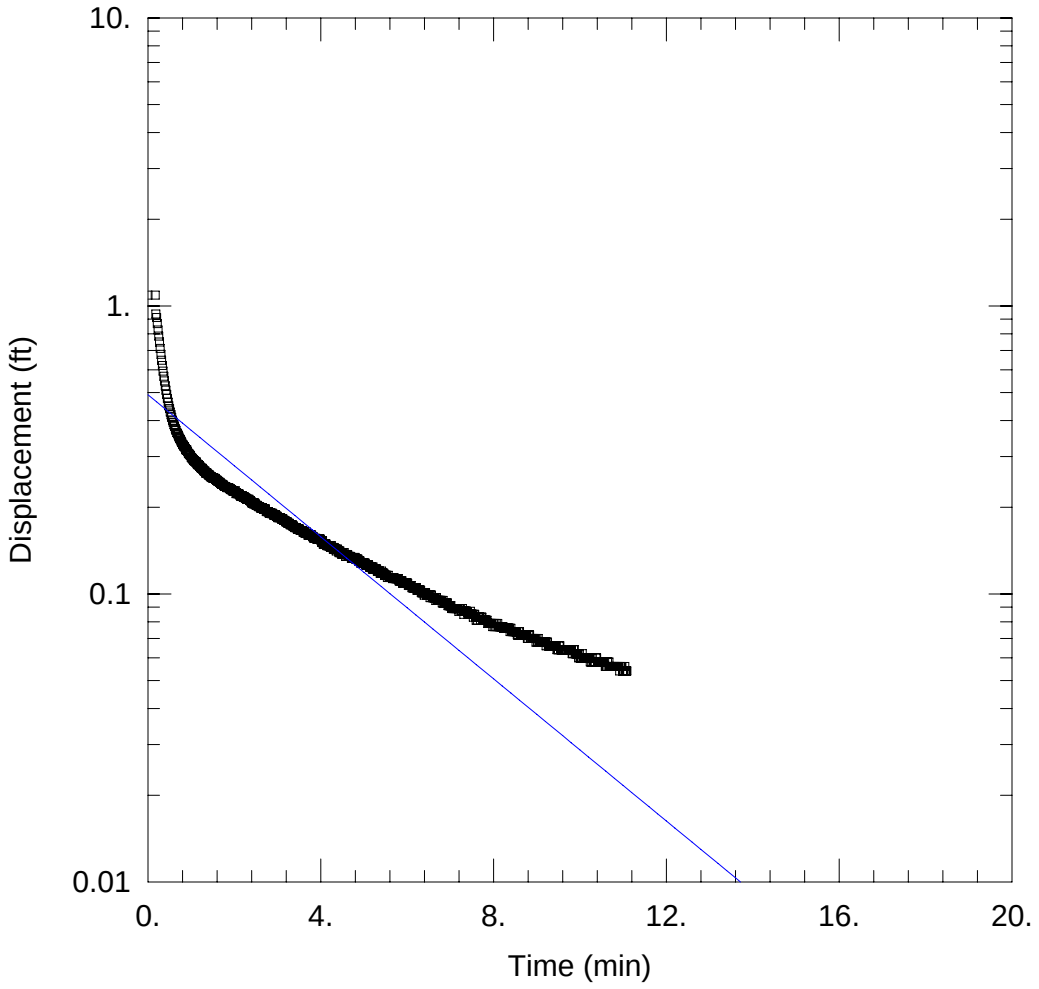
WELL DATA (RRMW0001)

Initial Displacement: 0.934 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.6006 ft/day Le = 0.1 ft



RRMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW1-out2BR.aqt
Date: 02/12/09 Time: 16:07:12

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

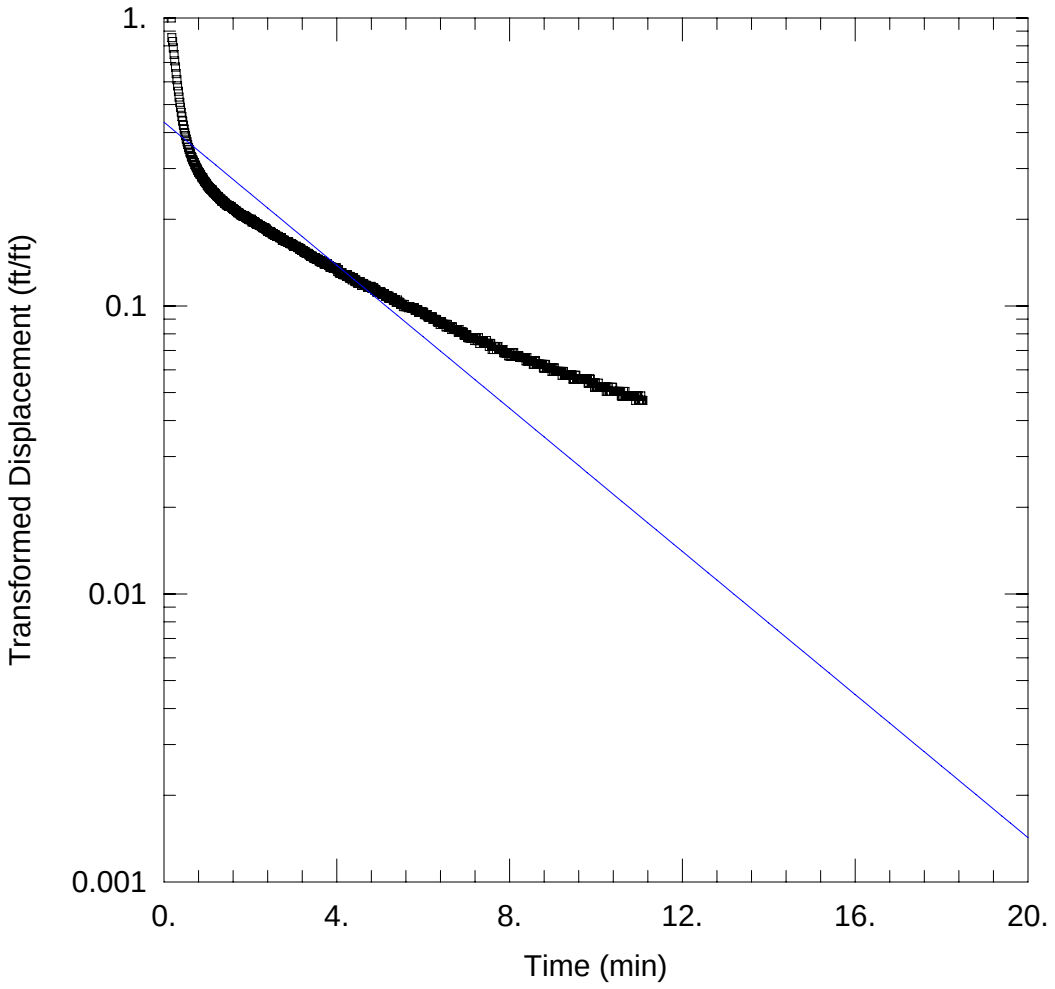
WELL DATA (RRMW0001)

Initial Displacement: 1.09 ft Static Water Column Height: 10.66 ft
Total Well Penetration Depth: 10.66 ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.2755 ft/day y0 = 0.4915 ft



RRMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW1-out2DGN.aqt
Date: 02/12/09 Time: 16:07:45

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

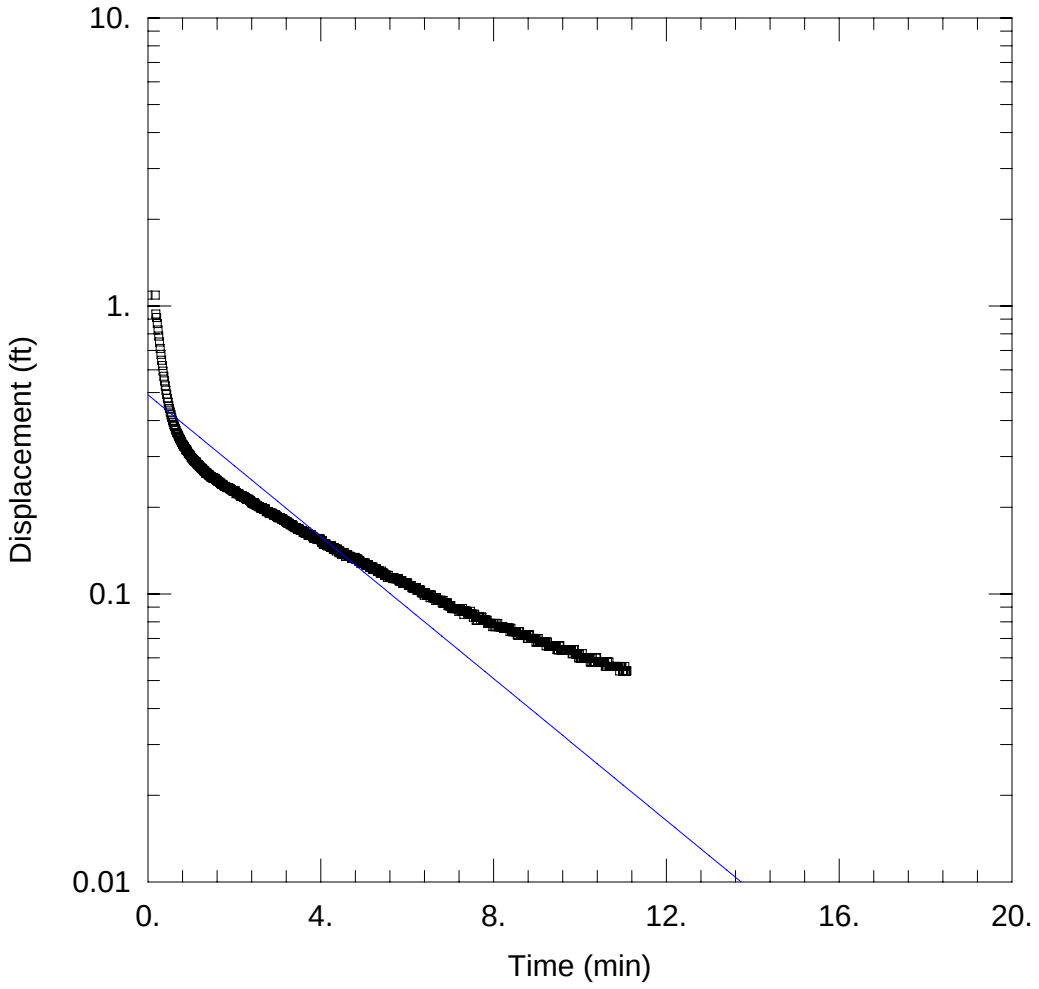
WELL DATA (RRMW0001)

Initial Displacement: 1.09 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 0.3306 ft/day y0 = 0.4886 ft



RRMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW1-out2HV.aqt
Date: 02/12/09 Time: 16:08:15

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

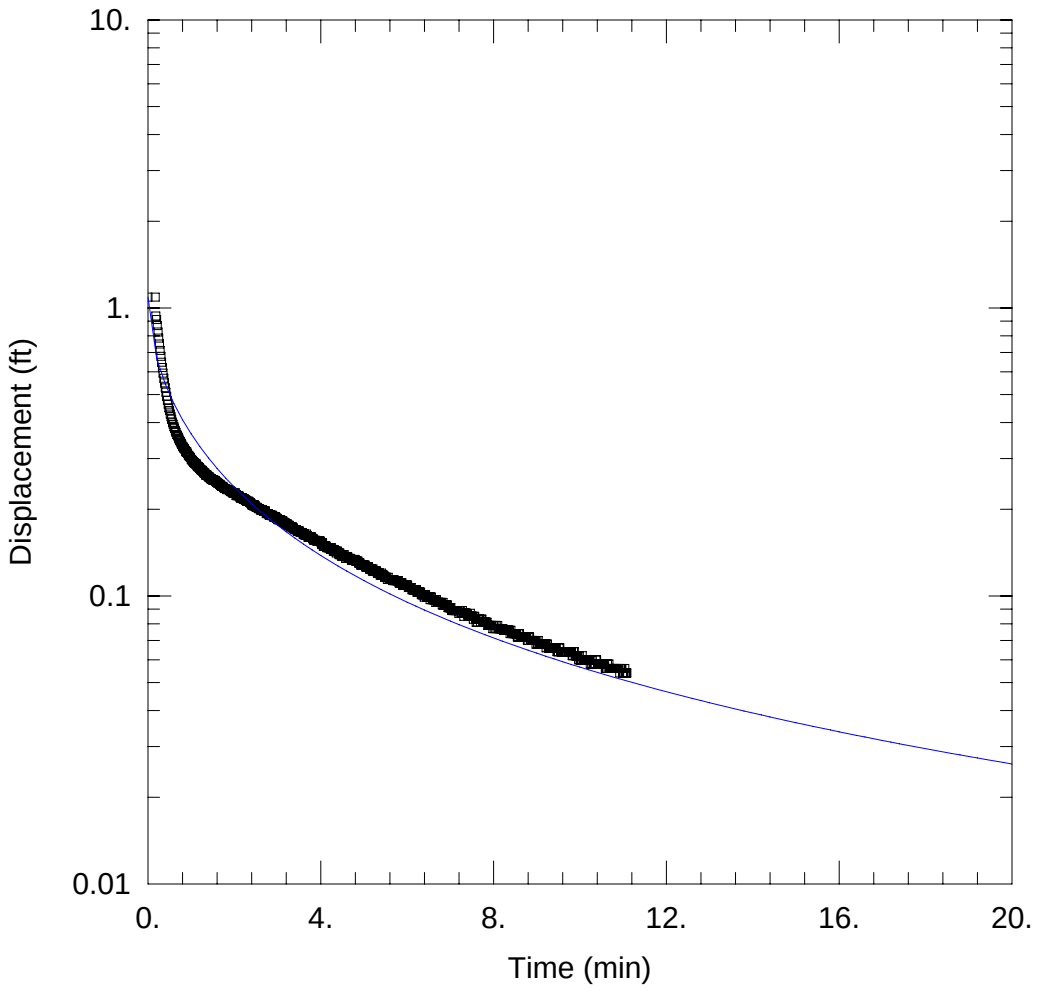
WELL DATA (RRMW0001)

Initial Displacement: 1.09 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.4327 ft/day y0 = 0.4911 ft



RRMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW1-out2KGS.aqt
Date: 02/12/09 Time: 16:08:46

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft

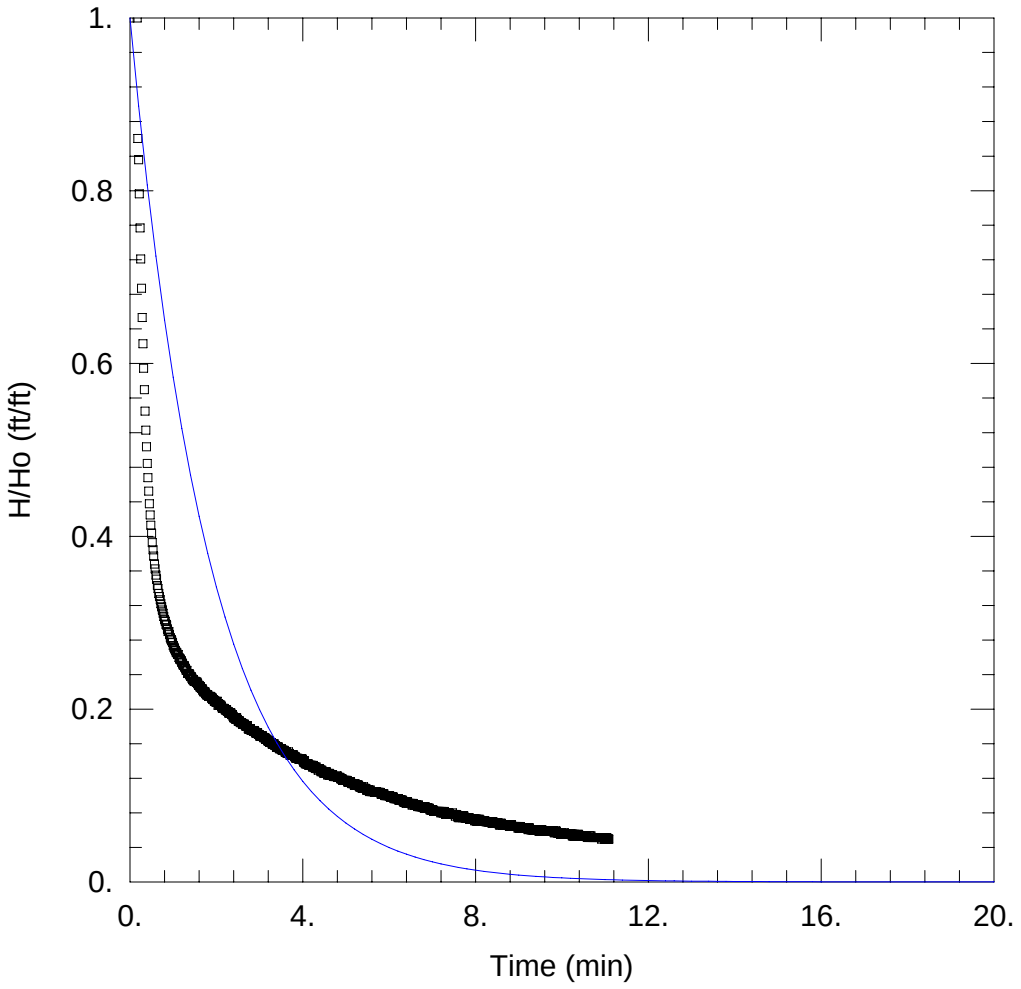
WELL DATA (RRMW0001)

Initial Displacement: 1.09 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.4077 ft/day
Kz/Kr = 1.
Ss = 0.002344 ft^{-1}



RRMW0001 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW1-out2SG.aqt
Date: 02/12/09 Time: 16:09:15

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0001
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 42.66 ft Anisotropy Ratio (Kz/Kr): 1.

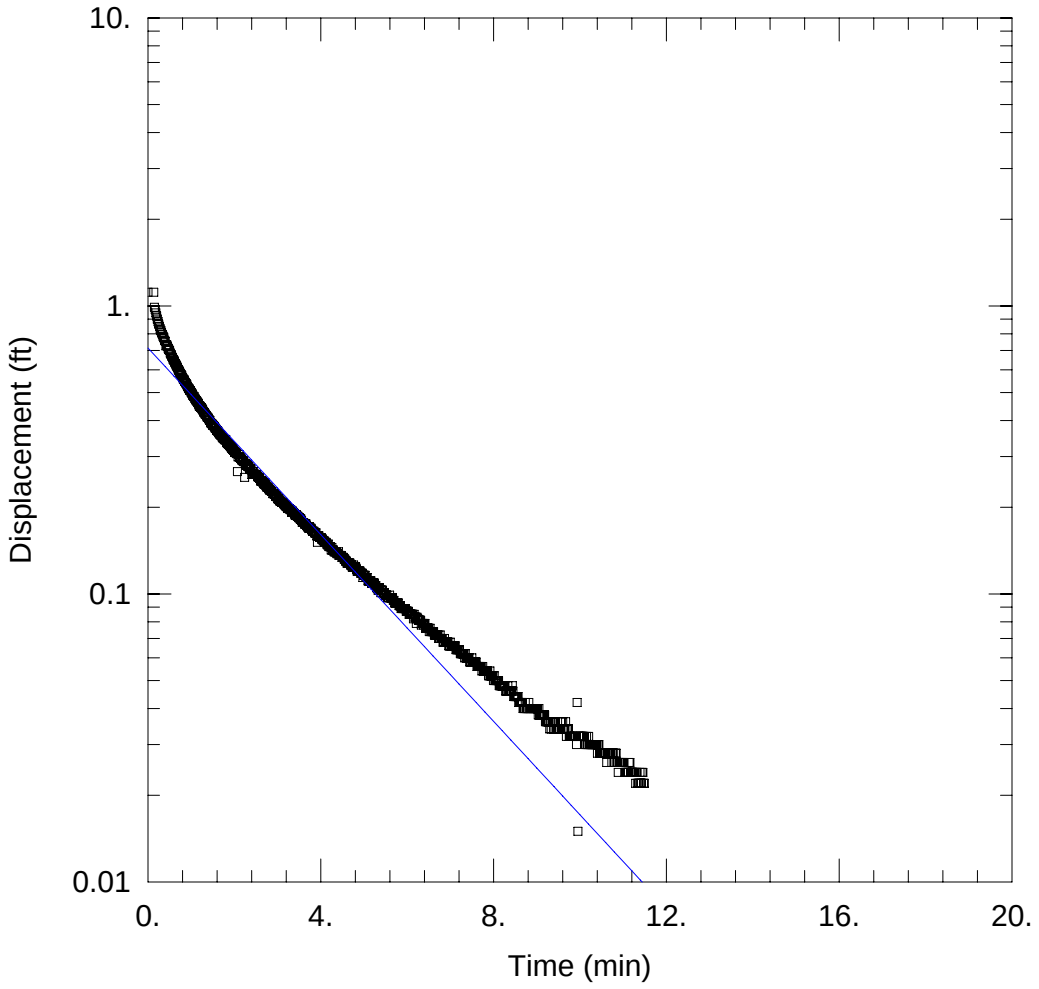
WELL DATA (RRMW0001)

Initial Displacement: 1.09 ft
Total Well Penetration Depth: 10.66 ft
Casing Radius: 0.08 ft
Static Water Column Height: 10.66 ft
Screen Length: 10. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.5217 ft/day Le = 0.1 ft



RRMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW2-in1BR.aqt
Date: 02/12/09 Time: 15:55:30

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

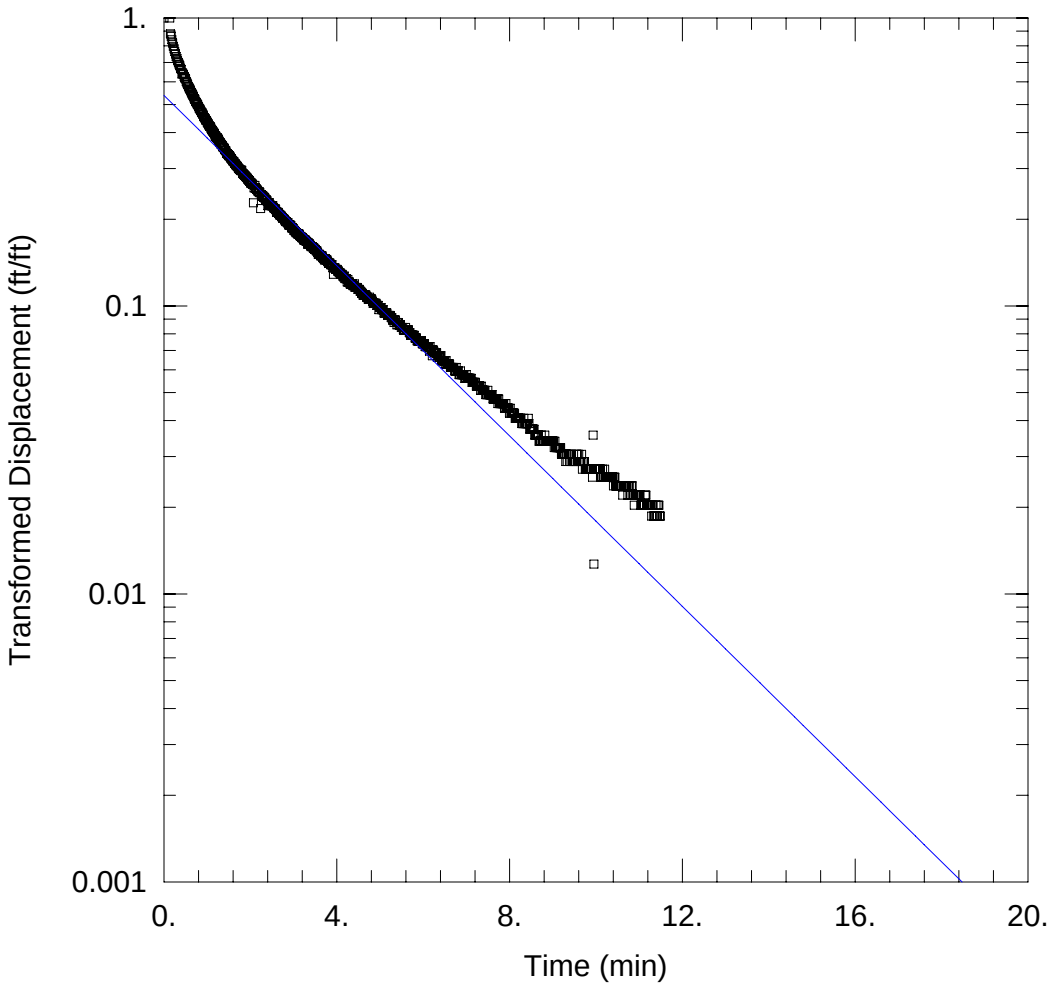
Saturated Thickness: 41.89 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RRMW0002)

Initial Displacement: 1.116 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.482 ft/day
y0 = 0.7141 ft



RRMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW2-in1DGN.aqt
Date: 02/12/09 Time: 15:56:06

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

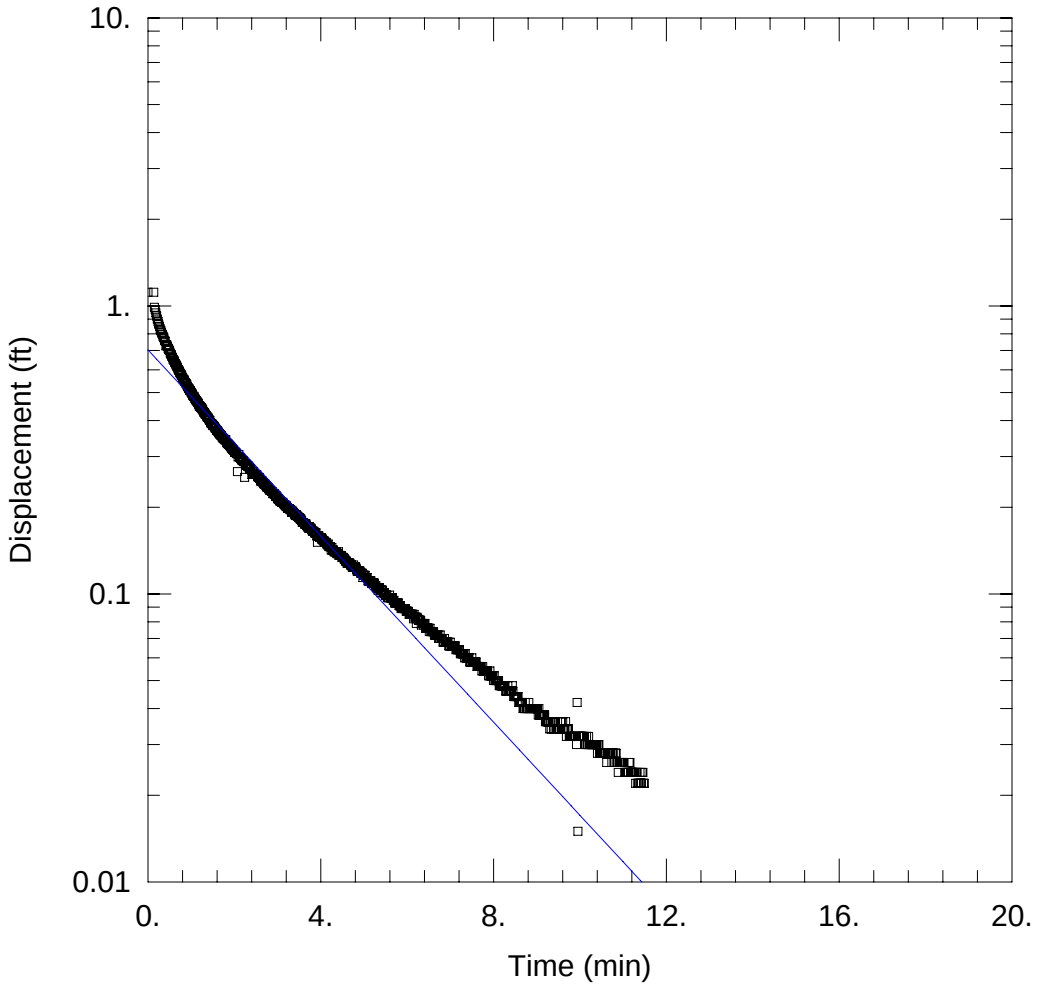
WELL DATA (RRMW0002)

Initial Displacement: 1.116 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 2.734 ft/day y0 = 0.6167 ft



RRMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW2-in1HV.aqt
Date: 02/12/09 Time: 15:56:36

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

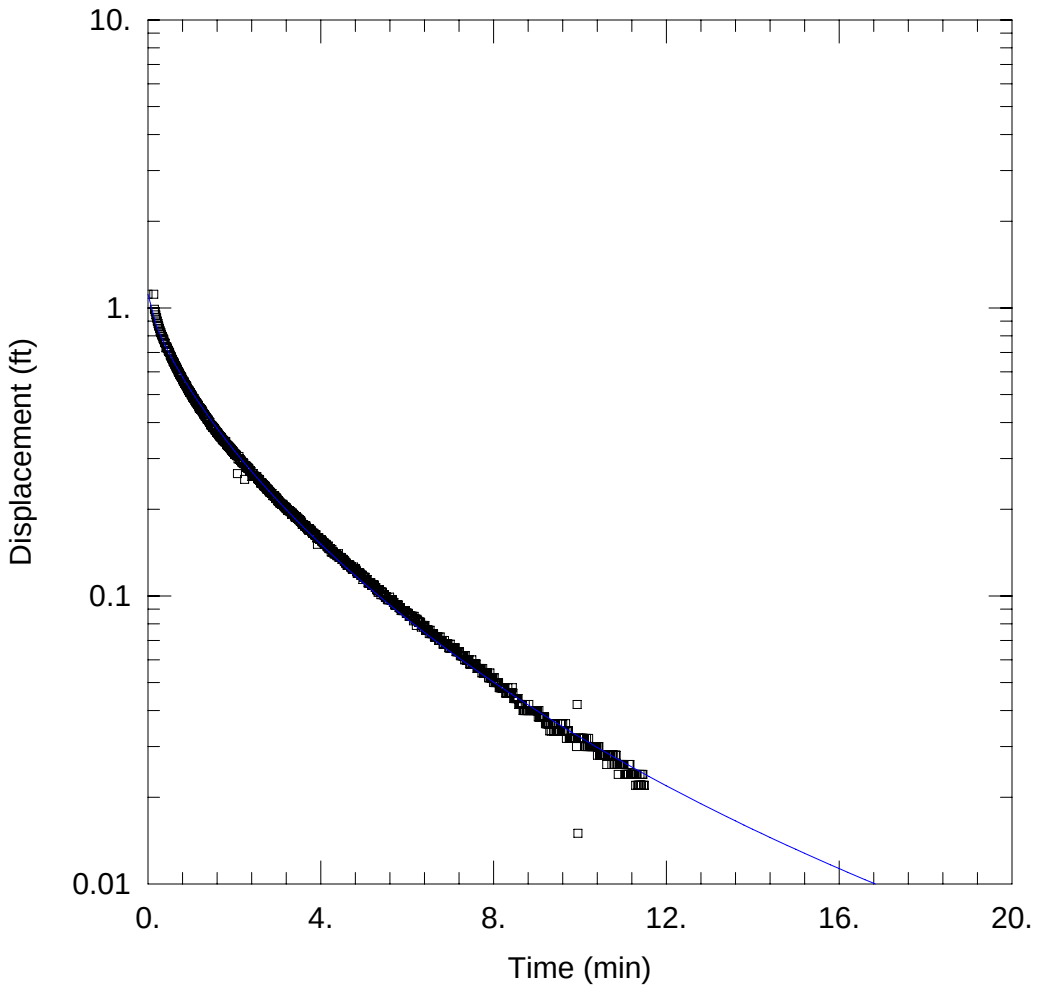
WELL DATA (RRMW0002)

Initial Displacement: 1.116 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.943 ft/day y0 = 0.7035 ft



RRMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW2-in1KGS.aqt
Date: 02/12/09 Time: 16:02:04

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft

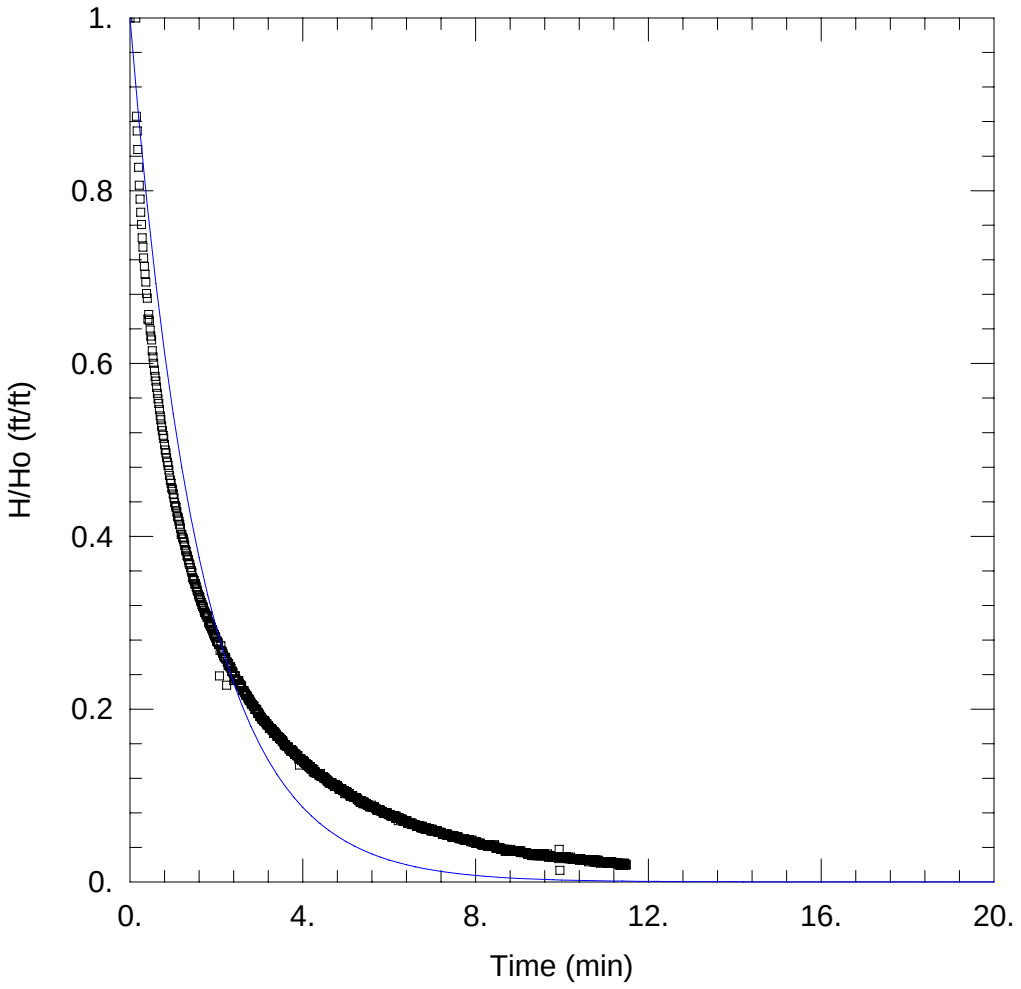
WELL DATA (RRMW0002)

Initial Displacement: 1.116 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.5535 ft/day
Kz/Kr = 1.
Ss = 0.0002057 ft^{-1}



RRMW0002 - FALLING HEAD TRIAL 1

Data Set: L:\...\RRMW2-in1SG.aqt
Date: 02/12/09 Time: 15:57:46

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

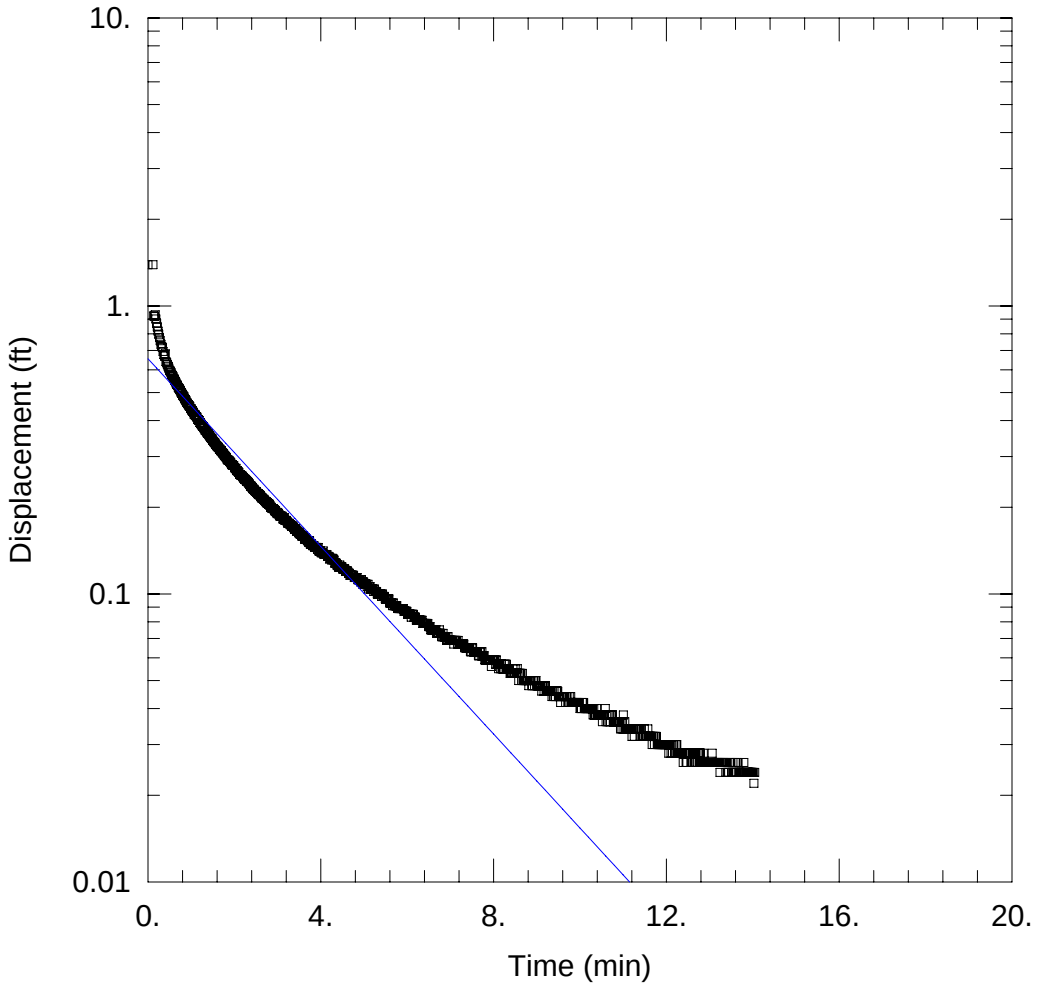
Saturated Thickness: 41.89 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RRMW0002)

Initial Displacement: 1.116 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 0.5868 ft/day
Le = 0.1 ft



RRMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW2-in2BR.aqt
Date: 02/12/09 Time: 15:58:06

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

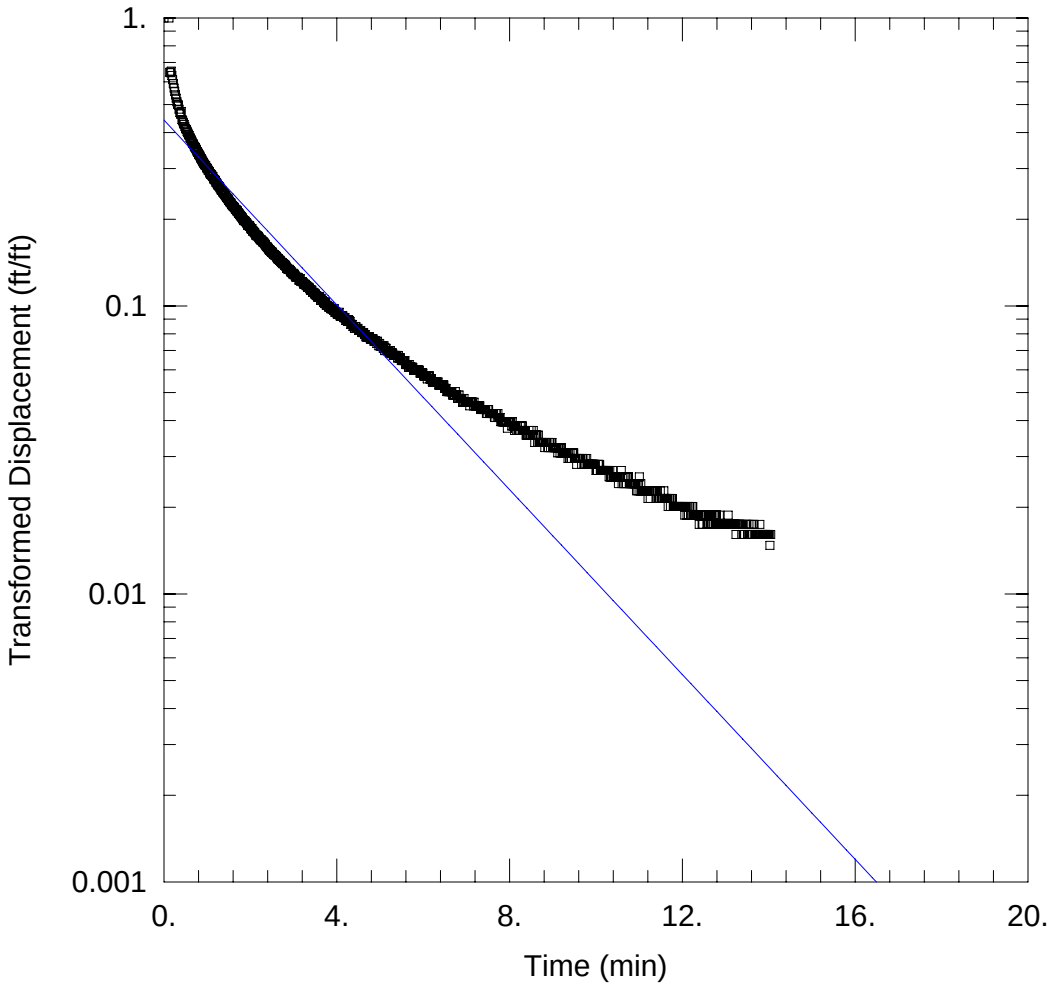
Saturated Thickness: 41.89 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RRMW0002)

Initial Displacement: 1.39 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.495 ft/day
y0 = 0.6553 ft



RRMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW2-in2DGN.aqt
Date: 02/12/09 Time: 15:58:29

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

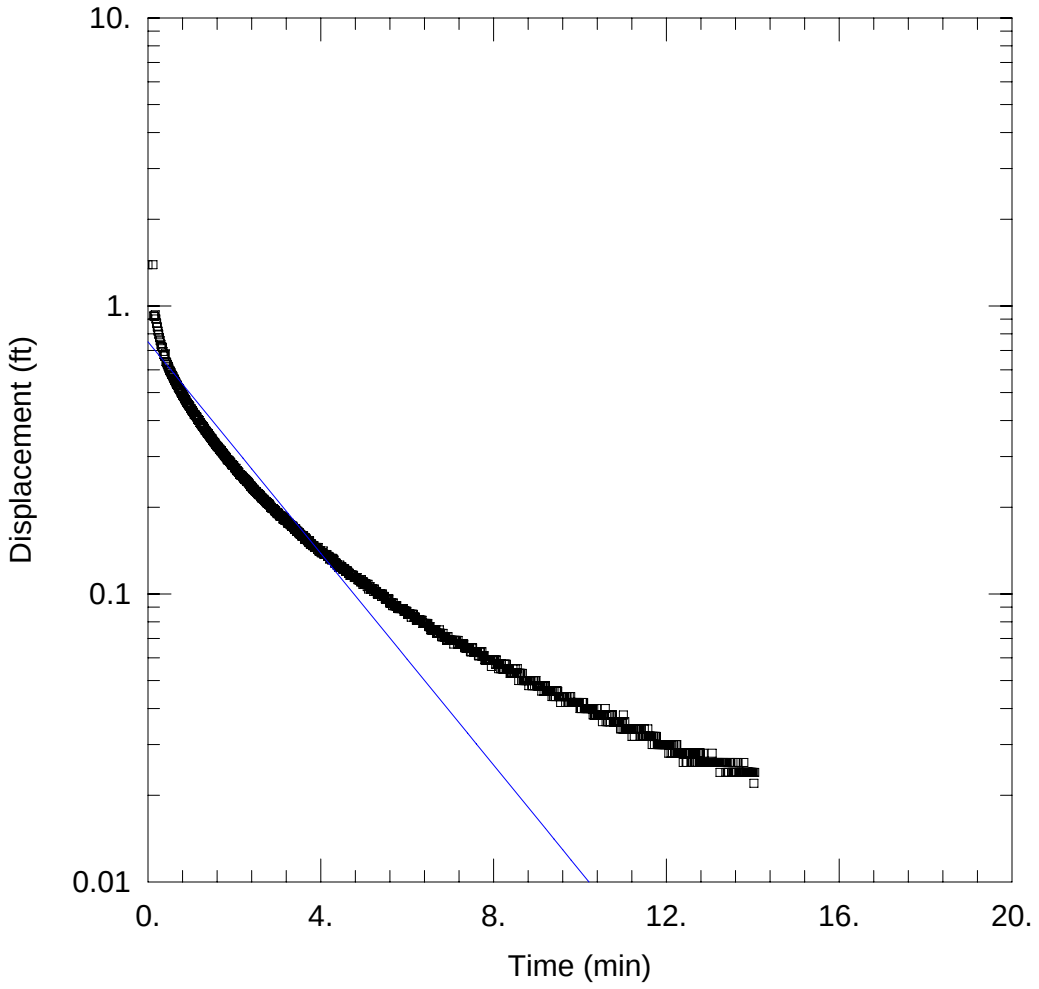
Saturated Thickness: 41.89 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RRMW0002)

Initial Displacement: 1.39 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Dagan
K = 2.966 ft/day
y0 = 0.6386 ft



RRMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW2-in2HV.aqt
Date: 02/12/09 Time: 15:58:54

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

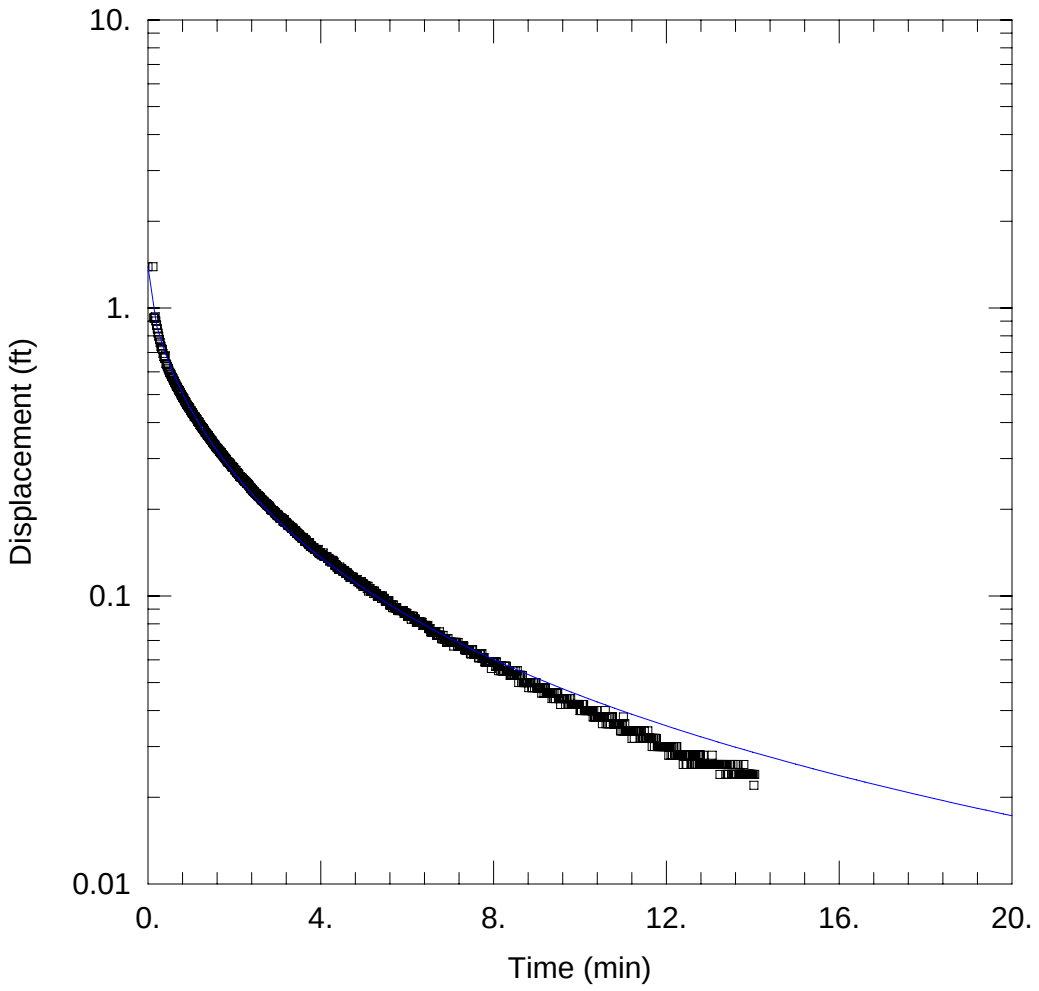
WELL DATA (RRMW0002)

Initial Displacement: 1.39 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 4.482 ft/day y0 = 0.7503 ft



RRMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW2-in2KGS.aqt
Date: 02/12/09 Time: 15:59:21

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft

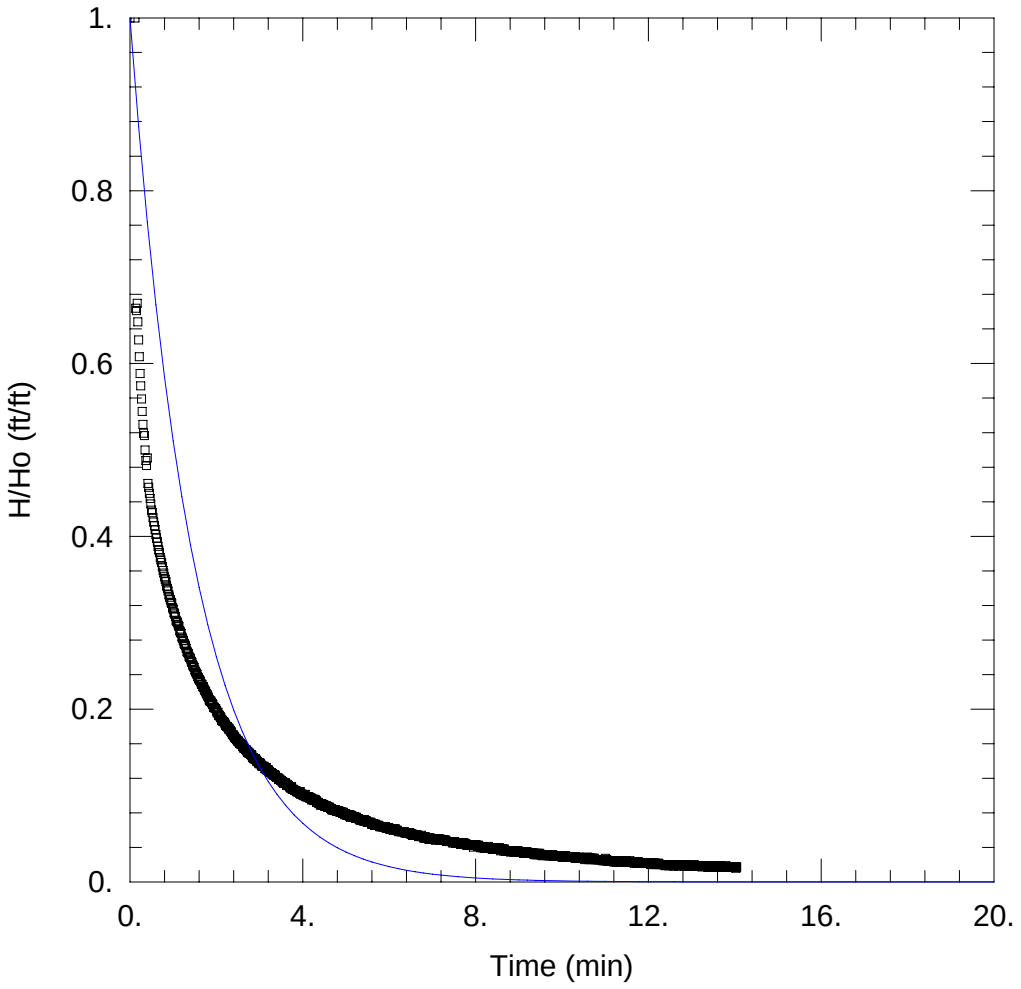
WELL DATA (RRMW0002)

Initial Displacement: 1.39 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.5984 ft/day
Kz/Kr = 1.
Ss = 0.001162 ft^{-1}



RRMW0002 - FALLING HEAD TRIAL 2

Data Set: L:\...\RRMW2-in2SG.aqt
Date: 02/12/09 Time: 15:59:49

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

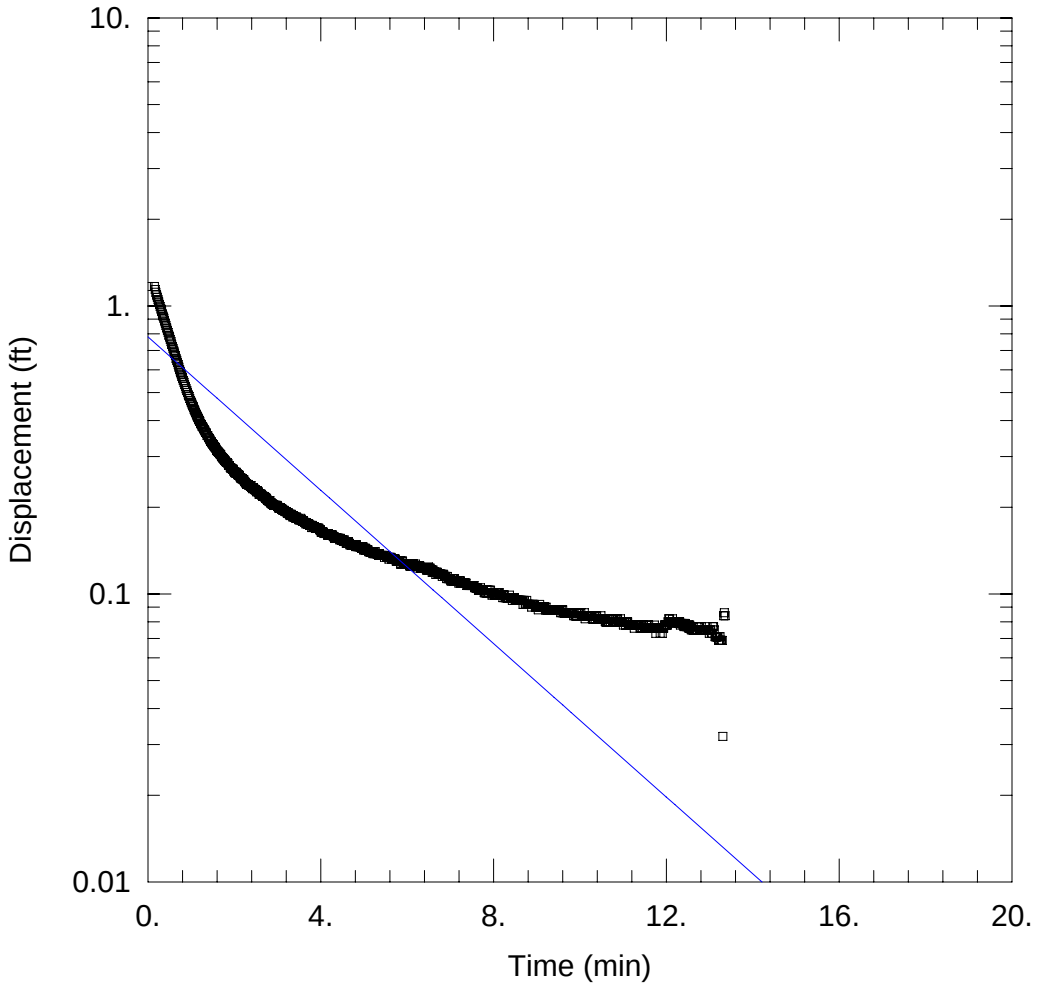
Saturated Thickness: 41.89 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RRMW0002)

Initial Displacement: 1.39 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Springer-Gelhar
K = 0.6445 ft/day
Le = 0.1 ft



RRMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW2-out1BR.aqt
Date: 02/12/09 Time: 16:09:42

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

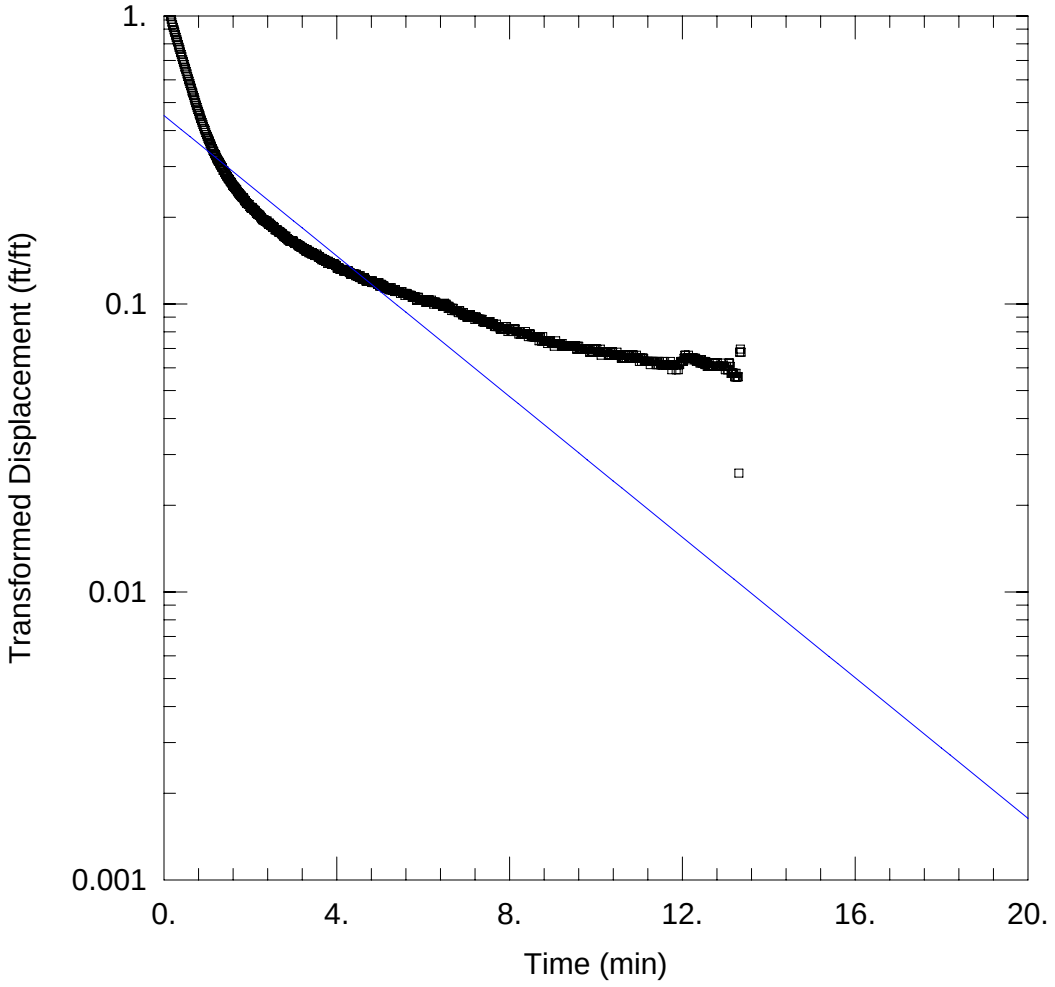
WELL DATA (RRMW0002)

Initial Displacement: 1.168 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.039 ft/day y0 = 0.7807 ft



RRMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW2-out1DGN.aqt
Date: 02/12/09 Time: 16:11:34

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

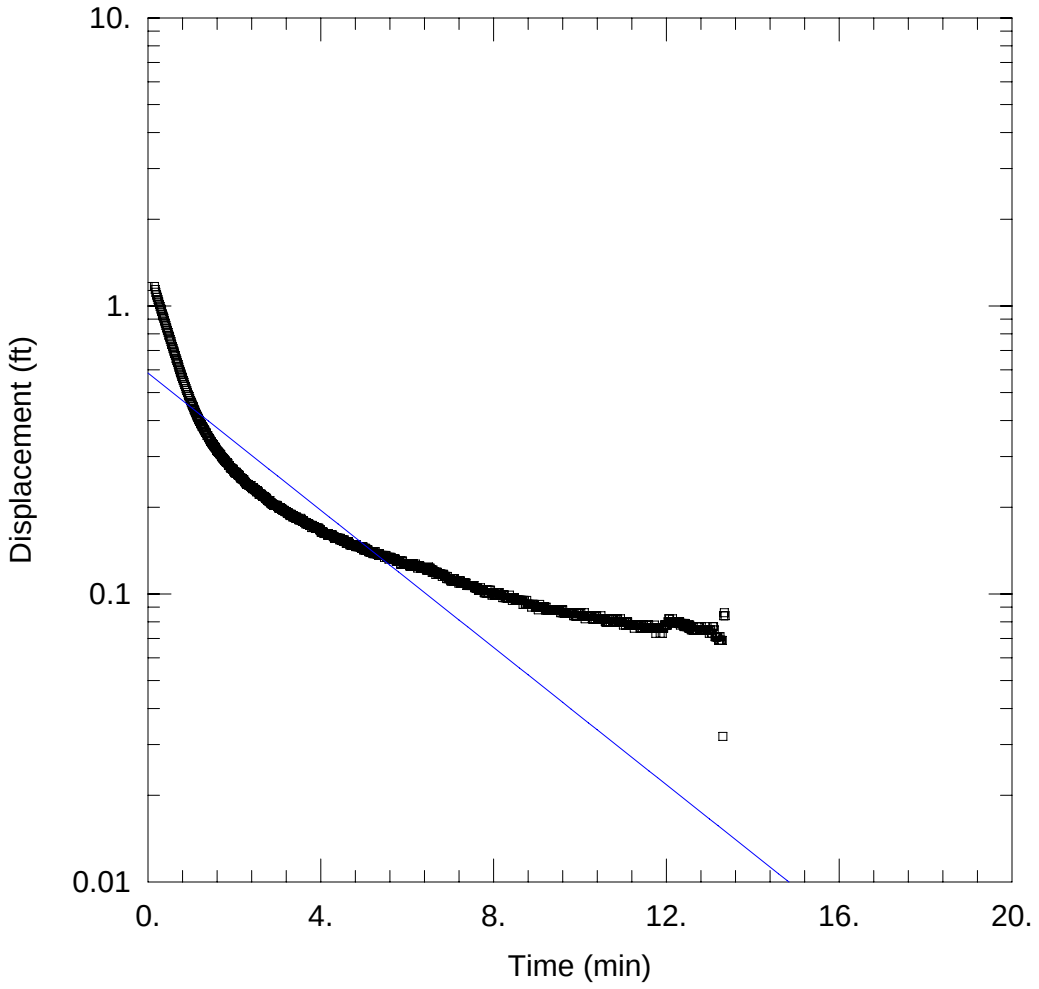
WELL DATA (RRMW0002)

Initial Displacement: 1.168 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 2.256 ft/day y0 = 0.5444 ft



RRMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW2-out1HV.aqt
Date: 02/12/09 Time: 16:11:58

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

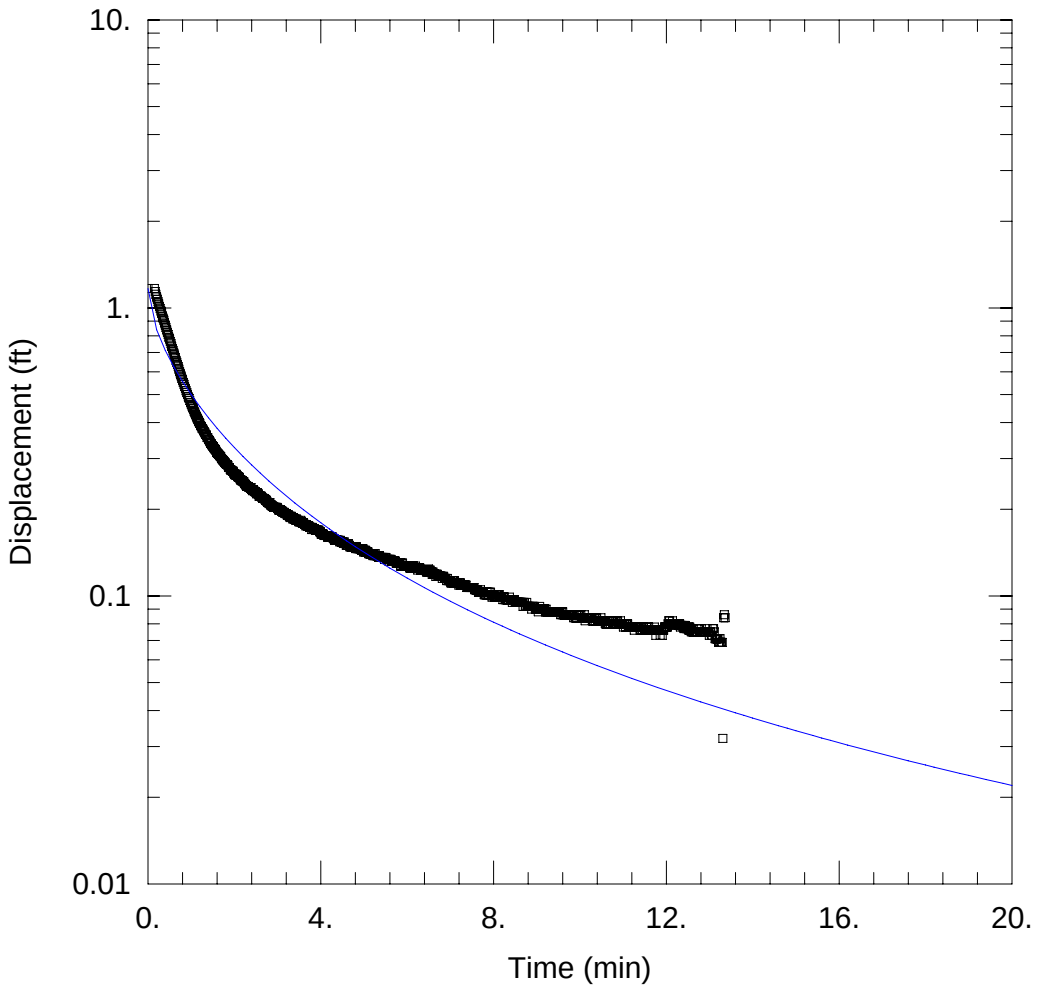
WELL DATA (RRMW0002)

Initial Displacement: 1.168 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.906 ft/day y0 = 0.5844 ft



RRMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW2-out1KGS.aqt
Date: 02/12/09 Time: 16:12:35

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft

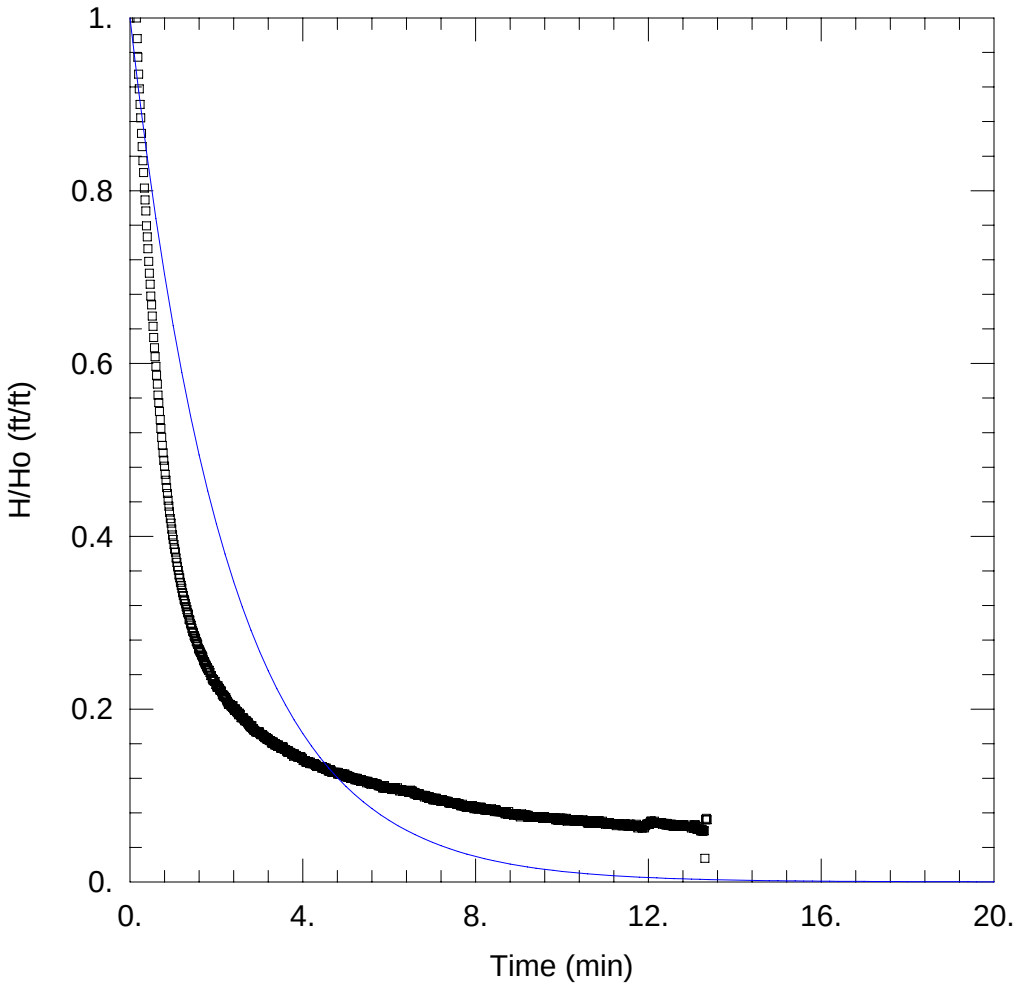
WELL DATA (RRMW0002)

Initial Displacement: 1.168 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.4219 ft/day
Kz/Kr = 1.
Ss = 0.0007336 ft^{-1}



RRMW0002 - RISING HEAD TRIAL 1

Data Set: L:\...\RRMW2-out1SG.aqt
Date: 02/12/09 Time: 16:12:58

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

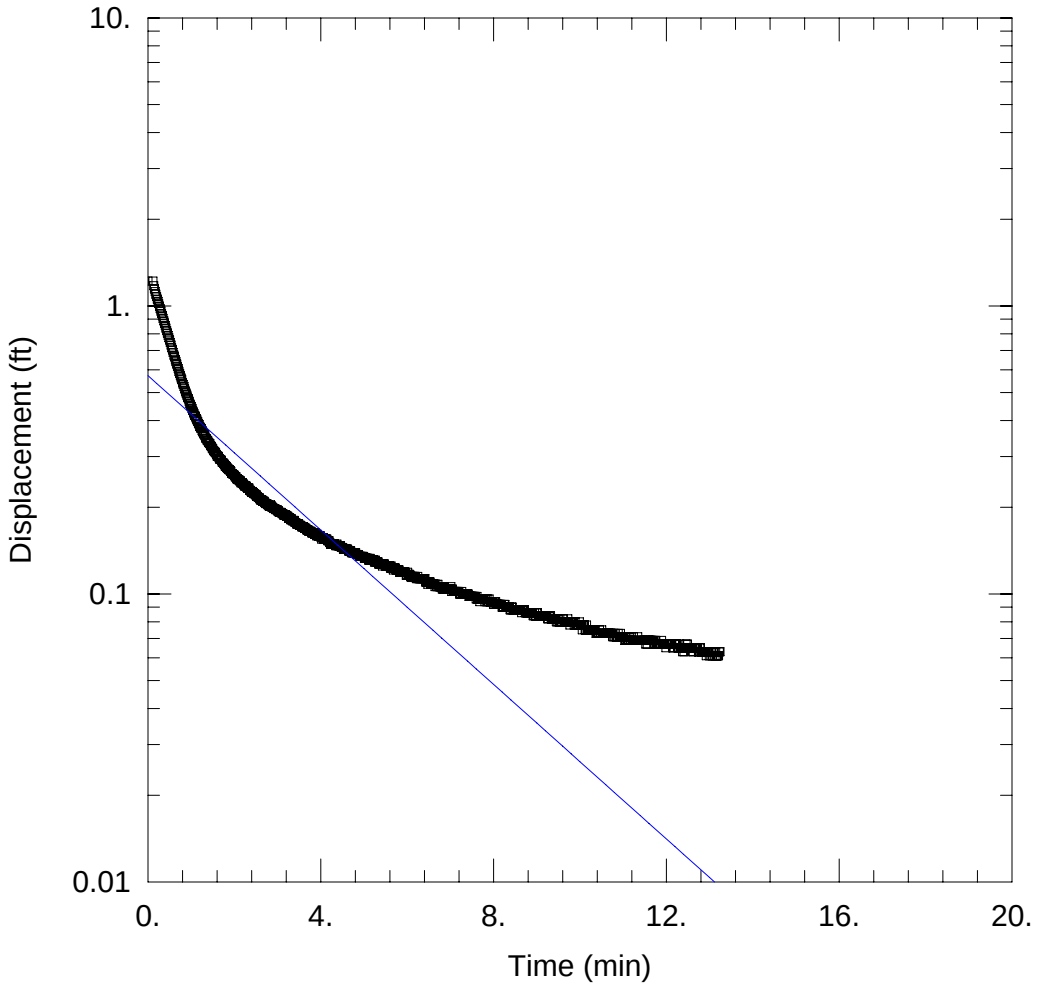
WELL DATA (RRMW0002)

Initial Displacement: 1.168 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.4219 ft/day Le = 0.1 ft



RRMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW2-out2BR.aqt
Date: 02/12/09 Time: 16:13:22

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

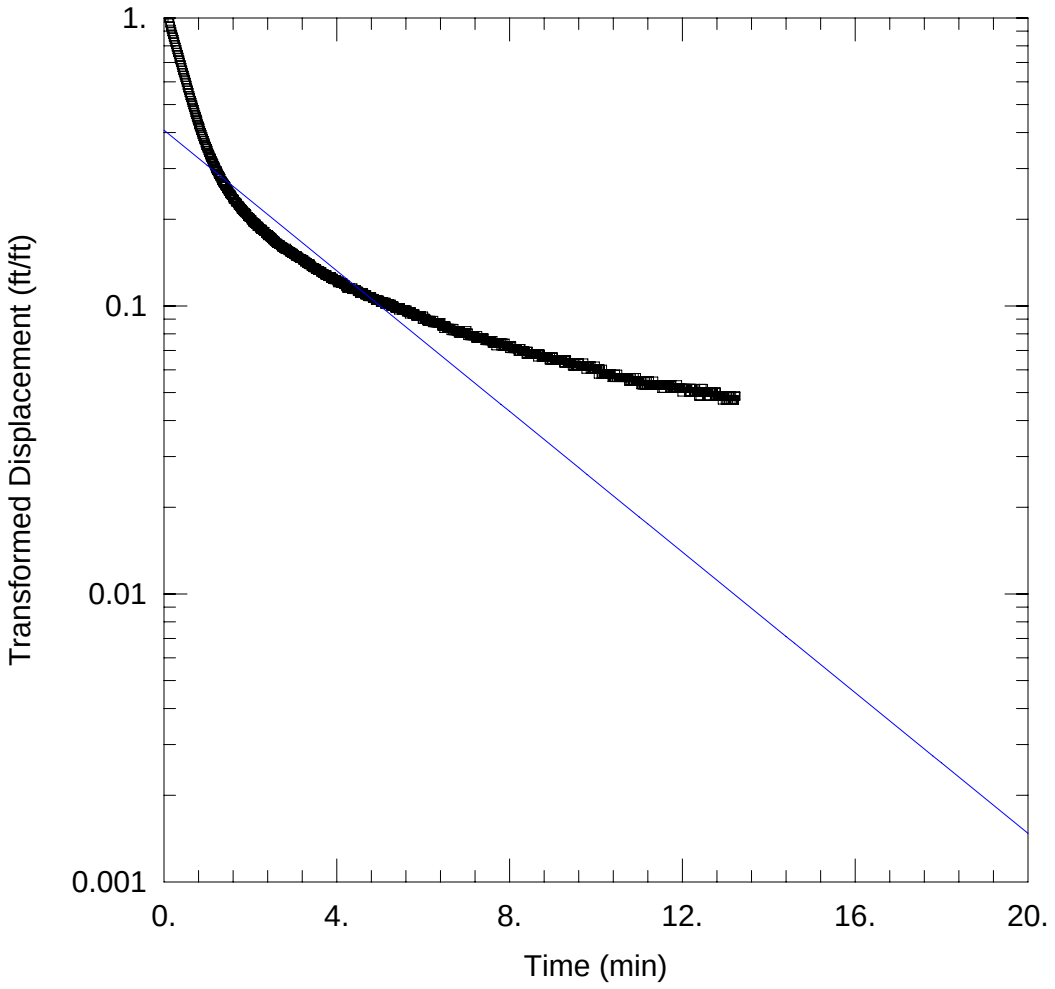
Saturated Thickness: 41.89 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RRMW0002)

Initial Displacement: 1.22 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.053 ft/day
y0 = 0.5727 ft



RRMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW2-out2DGN.aqt
Date: 02/12/09 Time: 16:13:45

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

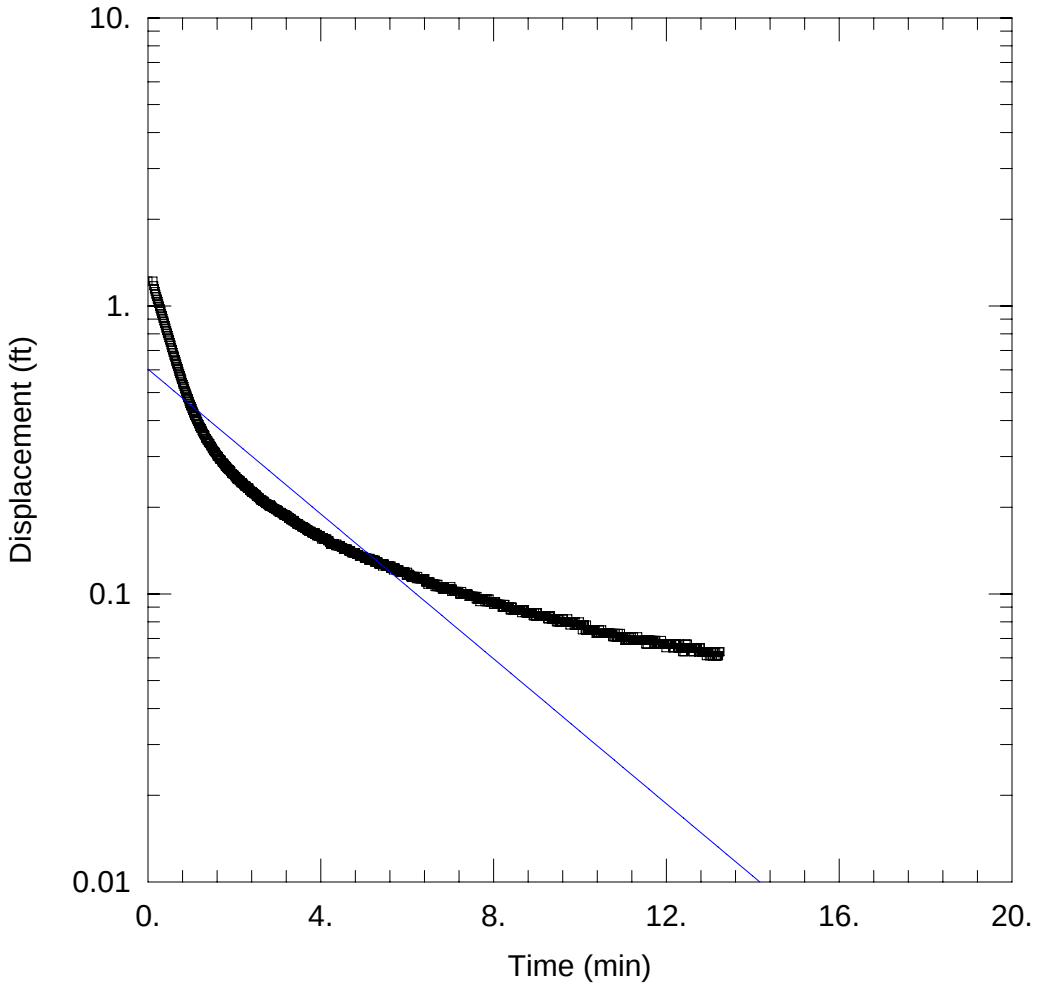
WELL DATA (RRMW0002)

Initial Displacement: 1.22 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Dagan

K = 2.257 ft/day y0 = 0.5161 ft



RRMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW2-out2HV.aqt
Date: 02/12/09 Time: 16:14:20

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

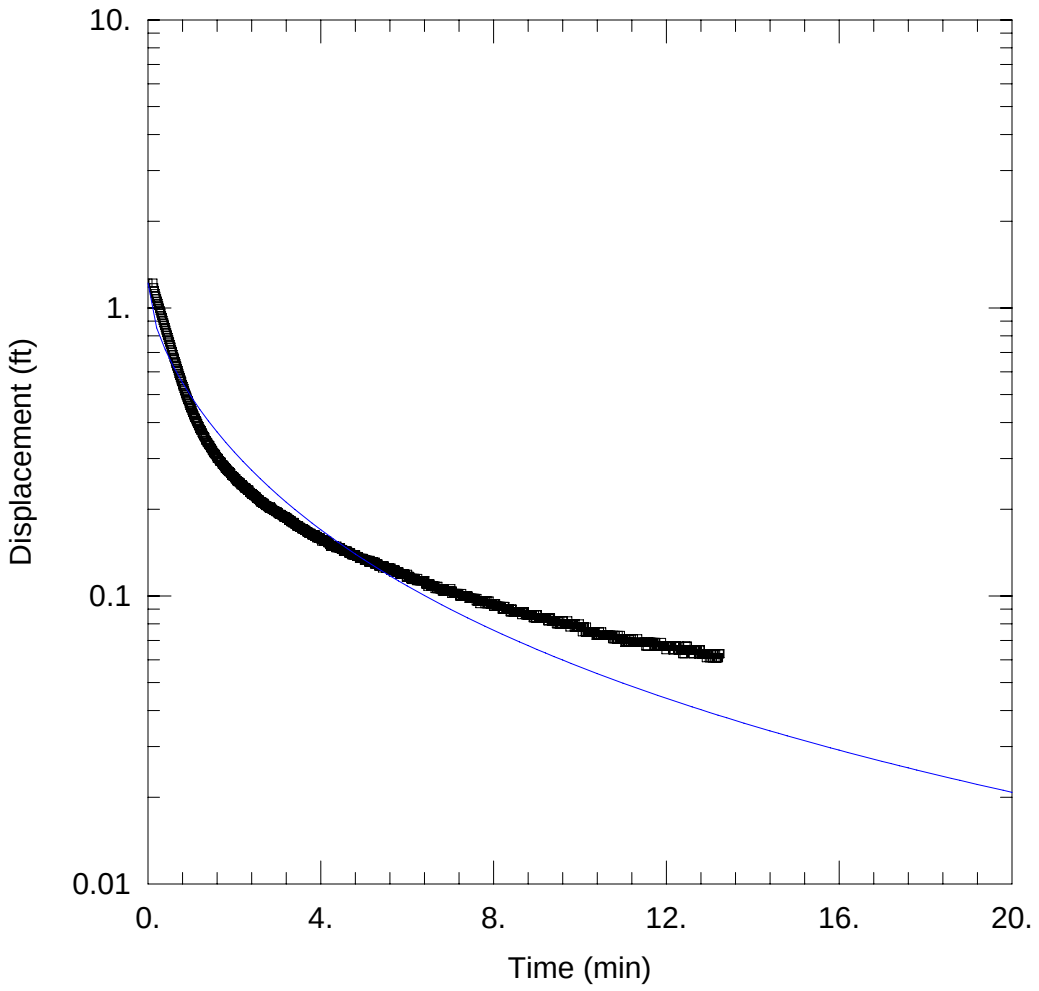
WELL DATA (RRMW0002)

Initial Displacement: 1.22 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.068 ft/day y0 = 0.603 ft



RRMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW2-out2KGS.aqt
Date: 02/12/09 Time: 16:14:49

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft

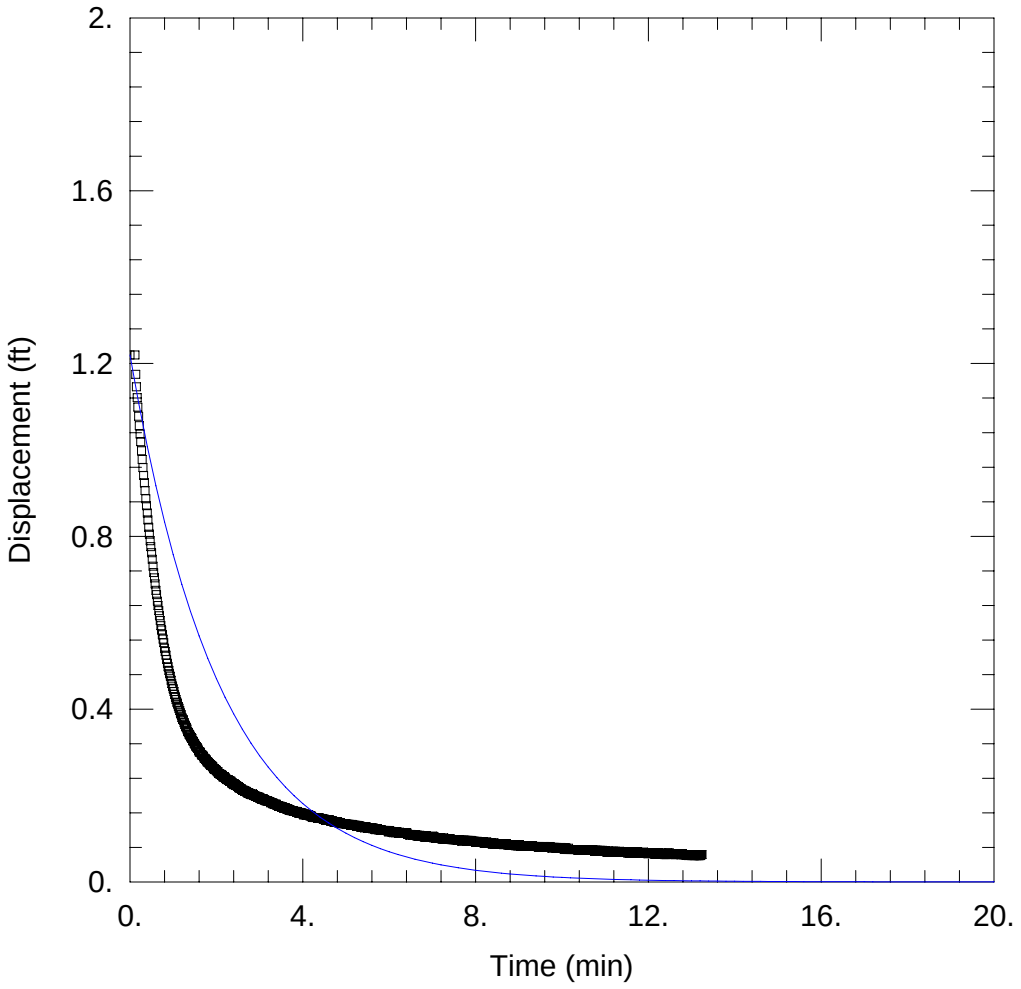
WELL DATA (RRMW0002)

Initial Displacement: 1.22 ft
Total Well Penetration Depth: 10. ft
Casing Radius: 0.08 ft
Static Water Column Height: 9.89 ft
Screen Length: 10. ft
Well Radius: 0.365 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: KGS Model

Kr = 0.4563 ft/day
Kz/Kr = 1.
Ss = 0.00081 ft^{-1}



RRMW0002 - RISING HEAD TRIAL 2

Data Set: L:\...\RRMW2-out2SG.aqt
Date: 02/12/09 Time: 16:15:14

PROJECT INFORMATION

Company: Weston Solutions, Inc.
Client: Sherwin-Williams
Location: Gibbsboro
Test Well: RRMW0002
Test Date: 9/7/2005

AQUIFER DATA

Saturated Thickness: 41.89 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RRMW0002)

Initial Displacement: 1.22 ft Static Water Column Height: 9.89 ft
Total Well Penetration Depth: 10. ft Screen Length: 10. ft
Casing Radius: 0.08 ft Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Springer-Gelhar

K = 0.4563 ft/day Le = 0.1 ft

ATTACHMENT 5, TABLE 1

PRECISION BASED ON RELATIVE STANDARD DEVIATION (RSD)
SHERWIN-WILLIAMS
BURN SITE and RAIL ROAD SITE
Gibbsboro - NJ

Well No.	Statistic	Bouwer & Rice (1976)	Hvorslev (1951)	Hyder et al. (KGS) (1994)	Dagan (1978)	Springer-Gelhar (1991)
BSMW0001	N	4	4	4	4	4
	Median (ft/day)	0.790	1.180	0.428	0.984	0.623
	Standard Deviation	0.064	0.135	0.190	0.167	0.279
	RSD	8.1%	11.5%	44.4%	17.0%	44.8%
BSMW0002	N	4	4	4	4	4
	Median (ft/day)	4.486	8.270	0.756	6.072	0.700
	Standard Deviation	1.968	3.620	0.461	2.365	0.319
	RSD	43.9%	43.8%	61.1%	38.9%	45.5%
BSMW0003	N	4	4	4	4	4
	Median (ft/day)	0.672	1.057	0.672	0.823	0.722
	Standard Deviation	0.185	0.294	0.185	0.226	0.173
	RSD	27.6%	27.8%	27.6%	27.5%	24.0%
BSMW0004	N	4	4	4	4	4
	Median (ft/day)	1.348	1.851	0.616	1.598	1.598
	Standard Deviation	0.931	1.282	0.931	1.060	1.060
	RSD	69.1%	69.2%	151.2%	66.4%	66.4%
BSMW0005	N	4	4	4	4	4
	Median (ft/day)	29.825	50.755	2.808	35.990	2.600
	Standard Deviation	7.253	14.034	0.410	9.157	0.632
	RSD	24.3%	27.7%	14.6%	25.4%	24.3%
BSMW0006	N	4	4	4	4	4
	Median (ft/day)	3.315	6.658	0.834	3.518	0.901
	Standard Deviation	0.896	1.490	0.261	1.193	0.182
	RSD	27.0%	22.4%	31.3%	33.9%	20.2%
BSMW0007	N	4	4	4	4	4
	Median (ft/day)	3.267	5.316	0.782	3.979	0.796
	Standard Deviation	0.499	1.381	0.126	0.913	0.131
	RSD	15.3%	26.0%	16.2%	22.9%	16.5%
RRMW0001	N	4	4	4	4	4
	Median (ft/day)	0.370	0.506	0.644	0.410	0.561
	Standard Deviation	0.163	0.274	0.317	0.204	0.240
	RSD	44.1%	54.1%	49.2%	49.6%	42.8%
RRMW0002	N	4	4	4	4	4
	Median (ft/day)	2.268	3.506	0.505	2.734	0.522
	Standard Deviation	0.256	0.752	0.082	0.362	0.106
	RSD	11.3%	21.4%	16.3%	13.2%	20.3%

Precision Rating: Based on RSD (Relative Standard Deviation)

High Precision:	RSD 0% - 5%
Moderate Precision:	RSD 5% - 10%
Low Precision:	RSD 10% - 20%
Very Low Precision:	RSD >20%

Attachment 5, Figure 1:
Linear Correlation Plot of Slug Test Data
Sherwin-Williams
Burn Site and Rail Road Site Wells
Gibbsboro, NJ